Appendix A
SHOVEL TEST LOG

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
1.1	1	0-17	10YR 4/1	DK GR	LO SA	NCM; tree roots
1.1	2	17-30	10YR 4/1	DK GR	SA SI	NCM; tree roots
1.1	3	30-59	10YR 5/4	YL BR	SA	NCM; tree roots
1.2	1	0-33	10YR 3/1	V DK GR	SA LO	NCM; 20% gravel
1.2	2	33-60	10YR 6/3	PALE BR	SA	NCM; 60% gravel
2.1	1	0-28	10YR 4/1	DK GR	SA LO	shotgun shell (discarded in field)
2.1	2	28-40	10YR 5/4	YL BR	SA	NCM
2.1	3	40-62	10YR 4/1	DK GR	SA SI	NCM; 15% gravel
3.1	1	0-50	10YR 4/2	DK GR BR	SA LO	piece glazed tile
3.1	2	50-61	10YR 6/6	BR YL	SA	NCM; roots; small gravel
3.2	1	0-33	10YR 3/2	V DK GR BR	SA LO	roofing tile (discarded in field)
3.2	2	33-56	10YR 6/3	PALE BR	SA	NCM; 25% gravel
4.1	1	0-28	10YR 3/2	V DK GR BR	SA LO	glazed tile; brick fragments; flat glass
4.1	2	28-47	10YR 4/2 10YR 7/4	DK GR BR V PALE BR	SA SA LO	tile; nail; mix of sand and sandy loam; pockets of beach sand and gravel
4.1	3	47-60	10YR 2/1 10YR 3/2	BL V DK GR BR	SA	coal; slag (discarded in field)
4.2	1	0-48	10YR 3/2	V DK GR BR	SA LO	coal; slag (discarded in field); root impasse at 48cm
4.3	1	0-36	10YR 4/2	DK GR BR	SA LO	flat glass (discarded in field); root impasse at 36cm
4.4	1	0-39	10YR 4/2	DK GR BR	SA LO	flat glass (discarded in field)
4.4	2	39-51	10YR 5/4	YL BR	SA LO	brick fragments (discarded in field); brick and rock impasse at 51cm
4.5	1	0-37	10YR 4/2	DK GR BR	SA LO	brick fragments (discarded in field)
4.5	2	37-46	10YR 5/4	YL BR	SA LO	coal; mortar (discarded in field); rock/fill impasse at 46cm
4.6	1	0-26	10YR 3/2	V DK GR BR	SA LO	brick fragments; mortar (discarded in field)
4.6	2	26-36	10YR 4/4	DK YL BR	SA CL	styrofoam cup (discarded in field); root impasse at 36cm
5.1	1	0-32	10YR 3/2	V DK GR BR	LO SA	coal (discarded in field)
5.1	2	32-60	10YR 4/6	DK YL BR	SA	coal (discarded in field)
5.2	1	0-37	10YR 3/2	V DK GR BR	SA LO	flat glass
5.2	2	37-62	10YR 4/6	DK YL BR	SA LO	coal (discarded in field)
5.3	1	0-35	10YR 3/2	V DK GR BR	SA SI	brick (discarded in field)
5.3	2	35-60	10YR 4/6	DK YL BR	SA SI	NCM; 5% gravel
5.4	1	0-38	10YR 3/2	V DK GR BR	LO SA	NCM
5.4	2	38-64	10YR 4/6	DK YL BR	SA SI	brick; coal (discarded in field)
6.1	1	0-28	10YR 3/2	V DK GR BR	LO SA	coal (discarded in field)
6.1	2	28-63	10YR 4/6	DK YL BR	SA	NCM; 15-20% gravel
6.2	1	0-32	10YR 3/2	V DK GR BR	LO SA	tin foil; styrofoam (discarded in field)
6.2	2	32-40	10YR 4/4	DK YL BR	SA	brick fragment (discarded in field); 10-15% gravel
6.2	3	40-57	10YR 3/3	DK BR	SA SI	NCM; root impasse at 57cm
6.3	1	0-34	10YR 3/2	V DK GR BR	SA LO	NCM; roots/vines
6.3	2	34-61	10YR 4/4	DK YL BR	SA	NCM
7.1	1	0-12	10YR 3/2	V DK GR BR	SA LO	NCM
7.1	2	12-39	10YR 4/2	DK GR BR	SA	NCM
7.1	3	39-67	10YR 5/6	YL BR	SA	brick; mortar (discarded in field); 25% gravel
7.2	1	0-14	10YR 3/2	V DK GR BR	SA LO	glass (collected); aluminum can
7.2	2	14-38	10YR 4/2	DK GR BR	SA	NCM
7.2	3	38-61	10YR 5/6	YL BR	SA	mortar (discarded in field)
Key	**Soil Color:** BL = black, BR = brown, DK = dark, GR = gray, LT = light, V = very, YL = yellow					
	Soil Description: CL = clay, LO = loam, SA = sand, SI = silt					
	Comments: NCM = no cultural material					

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
7.3	1	0-6	N/A	N/A	N/A	NCM; organic layer of roots and leaves; concrete impasse at 6cm
7.4	1	0-39	10YR 4/2	DK GR BR	SA LO	NCM
7.4	2	39-63	10YR 5/6	YL BR	SA	brick fragments (discarded in field)
7.5	1	0-42	10YR 4/2	DK GR BR	SA LO	NCM
7.5	2	42-60	10YR 5/6	YL BR	SA	mortar (discarded iin field)
7.6	1	0-45	10YR 4/2	DK GR BR	SA LO	NCM
7.6	2	45-61	10YR 5/6	YL BR	SA	whiteware fragment (collected); brick fragment (discarded in field)
7.6+1mN	1	0-45	10YR 3/2	V DK GR BR	SA LO	NCM
7.6+1mN	2	45-60	10YR 5/6	YL BR	SA	NCM
7.6+1mS	1	0-34	10YR 3/2	V DK GR BR	SA LO	coal; brick (discarded in field)
7.6+1mS	2	34-60	10YR 5/6	YL BR	SA	NCM
7.6+3mS	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 30cm
7.6+1mE	1	0-42	10YR 3/2	V DK GR BR	SA LO	NCM
7.6+1mE	2	42-60	10YR 5/6	YL BR	SA	NCM
7.6+3mE	1	0-32	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 32cm
7.6+1mW	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 30cm
8.1	1	0-61	10YR 3/2	V DK GR BR	SA LO	slag; coal; brick fragments (discarded in field)
8.2	1	0-60	10YR 3/2	V DK GR BR	SA LO	whiteware fragment (collected); brick/ slag/mortar fragments (discarded in field)
8.3	1	0-62	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); vines/roots
8.4	1	0-60	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field);
8.5	1	0-34	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); root/vine impasse at 34cm
8.6	1	0-40	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); rock impasse at 40cm
8.7	1	0-50	10YR 3/2	V DK GR BR	SA LO	crescent-shaped sheet brass fragment
8.7	2	50-60	10YR 4/2	DK GR BR	SA LO	NCM
9.1	1	0-25	10YR 3/1	V DK GR	LO SA	coal (discarded in field)
9.1	2	25-32	10YR 5/1	GR	SA	NCM; mostly gravel
9.1	3	32-61	10YR 6/4	LT BR YL	SA SI	NCM; 20% gravel
9.2	1	0-6	10YR 3/2	V DK GR BR	LO	NCM; organic layer; root impasse at 6cm
9.3	1	0-29	10YR 4/2	DK GR BR	SA LO	flat glass (collected); brick fragments (discarded in field)
9.3	2	29-60	10YR 5/6	YL BR	LO SA	NCM
9.4	1	0-32	10YR 4/2	DK GR BR	SA LO	glass
9.4	2	32-41	10YR 5/6	YL BR	LO SA	NCM; root impasse at 41cm
9.5	1	0-39	10YR 4/2	DK GR BR	SA LO	NCM
9.5	2	39-60	10YR 5/6	YL BR	LO SA	NCM
9.6	1	0-34	10YR 4/2	DK GR BR	SA LO	NCM
9.6	2	34-60	10YR 5/6	YL BR	LO SA	NCM
10.1	1	0-32	10YR 3/1	V DK GR	SA LO	brick (discarded in field);
10.2	1	0-28	10YR 3/2	V DK GR BR	SA LO	NCM
10.2	2	28-43	10YR 4/6	DK YL BR	SA SI	NCM
10.3	1	0-33	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
10.3	2	33-59	10YR 4/6	DK YL BR	SA SI	NCM; 5% gravel
10.4	1	0-32	10YR 3/2	V DK GR BR	SA LO	plastic tarp (discarded in field)
10.4	2	32-59	10YR 4/6	DK YL BR	SA SI	NCM
11.1	1	0-40	10YR 3/2	V DK GR BR	SA LO	glass
11.1	2	40-60	10YR 5/6	YL BR	SA LO	slag
11.2	1	0-10	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 10cm
11.3	1	0-40	10YR 4/2	DK GR BR	SA LO	whiteware (collected);
11.3	2	40-53	10YR 7/4	V PALE BR	SA	NCM; beach sand; rock fill impasse at 53cm

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
11.3+1mS	1	0-30	10YR 3/2	V DK GR BR	SA LO	whiteware; glass
11.3+1mS	2	30-37	10YR 5/6	YL BR	SA	NCM; root impasse at 27cm
11.3+1mN	1	0-32	10YR 3/2	V DK GR BR	SA LO	NCM
11.3+1mN	2	32-50	10YR 5/4	YL BR	SA	slag; coal (discarded in field)
11.3+1mW	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM
11.3+1mW	2	30-50	10YR 5/4	YL BR	SA	slag; coal (discarded in field)
11.3+3mN	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM
11.3+3mN	2	26-46	10YR 5/4	YL BR	SA LO	NCM
11.3+3mW	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM
11.3+3mW	2	30-41	10YR 5/6	YL BR	SA	NCM; root impasse at 41cm
11.3+3mS	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM
11.3+3mS	2	26-34	10YR 5/6	YL BR	SA	NCM; root impasse at 34cm
11.4	1	0-36	10YR 4/2	DK GR BR	SA LO	coal (discarded in field); root impasse at 36cm
12.1	1	0-29	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
12.1	2	29-41	10YR 4/4	DK YL BR	SA SI	NCM; roots; 5% gravel
12.2	1	0-36	10YR 3/2	V DK GR BR	SA LO	coal; coal ash (discarded in field)
12.2	2	36-63	10YR 4/4	DK YL BR	SA SI	glass, ceramics
12.2+1mW	1	0-43	10YR 3/2	V DK GR BR	SA LO	glass
12.2+1mW	2	43-53	10YR 5/6	YL BR	SA	NCM; root impasse at 53cm
12.2+3mW	1	0-28	10YR 3/2	V DK GR BR	SA LO	NCM
12.2+3mW	2	28-41	10YR 5/6	YL BR	SA	NCM; root impasse at 41cm
12.2+1mN	1	0-45	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 45cm
12.2+3mN	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM
12.2+3mN	2	26-60	10YR 5/4	YL BR	SA	NCM
12.2+1mS	1	0-33	10YR 3/2	V DK GR BR	SA LO	NCM
12.2+1mS	2	33-46	10YR 5/4	YL BR	SA	NCM; root impasse at 46cm
12.2+3mS	1	0-40	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); root impasse at 40cm
12.2+1mE	1	0-32	10YR 3/2	V DK GR BR	SA LO	brick fragment (discarded in field)
12.2+1mE	2	32-56	10YR 5/4	YL BR	SA	NCM
12.2+3mE	1	0-34	10YR 3/2	V DK GR BR	SA LO	NCM
12.2+3mE	2	34-49	10YR 5/4	YL BR	SA	NCM; root impasse at 49cm
12.3	1	0-34	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
12.3	2	34-60	10YR 4/4	DK YL BR	SA SI	coal (discarded in field)
12.4	1	0-40	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
12.4	2	40-61	10YR 4/6	DK YL BR	SA SI	coal (discarded in field)
13.1	1	0-19	10YR 3/1	V DK GR	LO SA	NCM; root impasse at 19cm
13.2	1	0-24	10YR 4/2	DK GR BR	SA LO	coal (discarded in field)
13.2	2	24-61	10YR 5/6	YL BR	LO SA	NCM
13.3	1	0-32	10YR 4/2	DK GR BR	SA LO	NCM
13.3	2	32-62	10YR 5/6	YL BR	LO SA	NCM
13.4	1	0-33	10YR 4/2	DK GR BR	SA LO	NCM
13.4	2	33-60	10YR 5/6	YL BR	LO SA	NCM
13.5	1	0-40	10YR 4/2	DK GR BR	SA LO	NCM
13.5	2	40-61	10YR 5/6	YL BR	LO SA	NCM
13.6	1	0-34	10YR 4/2	DK GR BR	SA LO	brick fragments (discarded in field)
13.6	2	34-60	10YR 5/6	YL BR	LO SA	NCM
14.1	1	0-20	10YR 4/2	DK GR BR	SA LO	NCM; root impasse at 20cm
14.2	1	0-30	10YR 4/2	DK GR BR	SA LO	NCM
14.2	2	30-60	10YR 5/6	YL BR	LO SA	NCM
14.3	1	0-40	10YR 4/2	DK GR BR	SA LO	NCM
14.3	2	40-53	10YR 5/6	YL BR	LO SA	NCM; root impasse at 53cm
15.1	1	0-20	10YR 3/2	V DK GR BR	LO SA	coal (discarded in field)
15.1	2	20-61	10YR 4/6	DK YL BR	SA LO	coal (discarded in field); roots
15.2	1	0-29	10YR 3/2	V DK GR BR	LO SA	coal (discarded in field)
15.2	2	29-59	10YR 4/6	DK YL BR	SA LO	coal (discarded in field)
15.3	1	0-39	10YR 3/2	V DK GR BR	LO SA	coal; plastic (discarded in field)
15.3	2	39-61	10YR 4/6	DK YL BR	SA LO	coal; brick (discarded in field)

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
16.1	1	0-27	10YR 4/2	DK GR BR	SA LO	brick; mortar; roofing shingles
16.1	2	27-50	10YR 5/6	YL BR	LO SA	brick fragments; roofing shingles; (discarded in field) rock/brick/fill impasse at 50cm
16.2	1	0-32	10YR 4/2	DK GR BR	SA LO	brick fragments (discarded in field)
16.2	2	32-60	10YR 5/6	YL BR	LO SA	NCM
16.3	1	0-40	10YR 4/2	DK GR BR	SA LO	brick fragments (discarded in field)
16.3	2	40-61	10YR 5/6	YL BR	LO SA	NCM
16.4	1	0-30	10YR 3/2	V DK GR BR	SA LO	whiteware; glass
16.4	2	30-47	10YR 3/2 10YR 5/6	V DK GR BR YL BR	SA LO	NCM
16.4	3	47-60	10YR 5/6	YL BR	LO SA	NCM
16.4+1mS	1	0-29	10YR 3/2	V DK GR BR	SA LO	brick; coal (discarded in field)
16.4+1mS	2	29-61	10YR 4/6	DK YL BR	SA	NCM
16.4+1mW	1	0-32	10YR 3/2	V DK GR BR	SA LO	flat glass (discarded in field)
16.4+1mW	2	32-60	10YR 4/6	DK YL BR	SA	NCM
16.4+1mN	1	0-38	10YR 3/2	V DK GR BR	SA LO	brick (discarded in field)
16.4+1mN	2	38-62	10YR 4/6	DK YL BR	SA	brick (discarded in field)
16.4+1mE	1	0-34	10YR 3/2	V DK GR BR	SA LO	brick; flat glass (discarded in field)
16.4+1mE	2	34-60	10YR 4/6	DK YL BR	SA SI	NCM
16.4+3mS	1	0-28	10YR 3/2	V DK GR BR	SA LO	brick; flat glass (discarded in field)
16.4+3mS	2	28-60	10YR 4/6	DK YL BR	SA SI	ceramics
16.4+3mW	1	0-35	10YR 3/2	V DK GR BR	SA LO	NCM
16.4+3mW	2	35-61	10YR 4/6	DK YL BR	SA SI	brick (discarded in field)
16.4+3mN	1	0-33	10YR 3/2	V DK GR BR	SA LO	NCM
16.4+3mN	2	33-61	10YR 4/6	DK YL BR	SA SI	NCM
16.4+3mE	1	0-25	10YR 3/2	V DK GR BR	SA LO	NCM; concrete impasse at 25cm
16.5	1	0-38	10YR 3/2	V DK GR BR	SA LO	large brick fragment (discarded in field)
16.5	2	38-60	10YR 5/6	YL BR	SA CL	NCM
16.6	1	0-23	10YR 4/2	DK GR BR	SA LO	NCM
16.6	2	23-35	10YR 6/6	BR YL	LO SA	NCM
16.7	1	0-30	10YR 4/2	DK GR BR	SA LO	coal
16.7	2	30-56	10YR 5/6	YL BR	SA LO	NCM; root impasse at 56cm
17.1	1	0-37	10YR 3/1	V DK GR	LO SA	NCM; roots
17.1	2	37-61	10YR 5/6	YL BR	LO SA	NCM; roots
17.2	1	0-17	10YR 3/1	V DK GR	LO SA	NCM; roots
17.2	2	17-45	10YR 4/2	DK GR BR	SA LO	NCM; 40% gravel; root impasse at 45cm
17.3	1	0-39	10YR 4/2	DK GR BR	SA LO	NCM; roots
17.3	2	39-61	10YR 5/6	YL BR	LO SA	NCM; roots
17.4	1	0-43	10YR 4/2	DK GR BR	SA LO	NCM
17.4	2	43-60	10YR 5/6	YL BR	LO SA	brick fragments (discarded in field)
17.5	1	0-23	10YR 5/1	GR	LO	NCM; 60% gravel
17.5	2	23-49	10YR 4/3	BR	LO SA	NCM
18.1	1	0-29	10YR 3/2	V DK GR BR	LO SA	coal (discarded in field)
18.1	2	29-61	10YR 4/6	DK YL BR	SA	coal (discarded in field); mortar ceramics; glass (collected)
18.1+1mS	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 30cm
18.1+1mE	1	0-40	10YR 3/2	V DK GR BR	SA LO	aluminum can; brick fragment; coal
18.1+1mE	2	40-60	10YR 5/6	YL BR	SA	NCM
18.2	1	0-36	10YR 3/2	V DK GR BR	LO SA	plastic (discarded in field)
18.2	2	36-62	10YR 4/6	DK YL BR	SA	coal; brick (discarded in field)
18.3	1	0-28	10YR 3/1	V DK GR	LO	styrofoam (discarded in field);
19.1	1	0-12	10YR 3/2	V DK GR BR	SA LO	NCM
19.1	2	12-43	10YR 5/6	YL BR	LO SA	coal; brick (discarded in field); whiteware; glass (collected)
19.1	3	43-61	10YR 4/6	DK YL BR	LO SA	brick fragments (discarded in field)
19.1+1mN	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
19.1+1mN	2	26-45	N/A	N/A	N/A	gravel layer; slag; brick fragments (discarded in field)
19.1+1mN	3	45-60	10YR 5/6	YL BR	SA	NCM
19.1+3mN	1	0-27	10YR 3/2	V DK GR BR	SA LO	NCM
19.1+3mN	2	27-60	10YR 5/6	YL BR	LO SA	metal
19.1+1mS	1	0-35	10YR 3/2	V DK GR BR	SA LO	NCM
19.1+1mS	2	35-43	10YR 5/6	YL BR	LO SA	slag; coal; rock impasse at 43cm
19.1+1mE	1	0-27	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 27cm
19.1+3mE	1	0-28	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 28cm
19.1+1mW	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM
19.1+1mW	2	30-50	10YR 5/6	YL BR	SA	NCM; root impasse at 50cm
19.1+3mW	1	0-36	10YR 3/2	V DK GR BR	SA LO	NCM
19.1+3mW	2	36-41	10YR 5/6	YL BR	SA	NCM; root impasse at 41cm
19.2	1	0-14	10YR 3/2	V DK GR BR	SA LO	NCM
19.2	2	14-36	10YR 5/6	YL BR	LO SA	NCM
19.2	3	36-60	10YR 4/6	DK YL BR	LO SA	NCM
19.3	1	0-38	10YR 4/2	DK GR BR	SA LO	slag; coal (discarded in field); glass (collected)
19.3	2	38-63	10YR 5/6	YL BR	LO SA	NCM
19.4	1	0-46	10YR 4/2	DK GR BR	SA LO	button; whiteware; glass
19.4	2	46-63	10YR 5/6	YL BR	LO SA	NCM
19.4+1mS	1	0-32	10YR 4/2	DK GR BR	SA LO	NCM
19.4+1mS	2	32-60	10YR 5/6	YL BR	LO SA	coal (discarded in field);
19.4+3mS	1	0-36	10YR 4/2	DK GR BR	SA LO	NCM
19.4+3mS	2	36-62	10YR 5/6	YL BR	LO SA	glass; ceramics (collected); flat glass; brick fragments (discarded in field)
19.4+1mW	1	0-40	10YR 4/2	DK GR BR	SA LO	NCM
19.4+1mW	2	40-62	10YR 5/6	YL BR	LO SA	NCM
19.4+3mW	1	0-38	10YR 4/2	DK GR BR	SA LO	plastic; roofing tile (discarded in field)
19.4+3mW	2	38-60	10YR 5/6	YL BR	LO SA	coal (discarded in field); whiteware (collected)
19.4+1mN	1	0-31	10YR 4/2	DK GR BR	SA LO	foil wrapper; flat glass; brick fragments (discarded in field); root impasse at 31cm
19.4+1mE	1	0-25	10YR 4/2	DK GR BR	SA LO	roofing tiles (discarded in field); root impasse at 25cm
19.4+3mE	1	0-35	10YR 4/2	DK GR BR	SA LO	roofing tiles (discarded in field)
19.4+3mE	2	35-60	10YR 5/6	YL BR	LO SA	roofing tile (discarded in field); 10% gravel
19.5	1	0-47	10YR 4/2	DK GR BR	SA LO	flat glass (discarded in field); roots
19.5	2	47-60	10YR 5/6	YL BR	LO SA	NCM; roots
19.6	1	0-50	10YR 4/2	DK GR BR	SA LO	NCM
19.6	2	50-60	10YR 5/6	YL BR	LO SA	NCM
20.1	1	0-41	10YR 3/2	V DK GR BR	SA LO	glass
20.1	2	41-63	10YR 4/6	DK YL BR	SA	coal (discarded in field)
20.2	1	0-37	10YR 3/2	V DK GR BR	SA LO	coal (discarded in field)
20.2	2	37-60	10YR 4/6	DK YL BR	SA	coal ash (discarded in field)
20.3	1	0-43	10YR 3/2	V DK GR BR	SA LO	mortar (discarded in field)
20.3	2	43-60	10YR 4/6	DK YL BR	SA	NCM
20.4	1	0-31	10YR 3/2	V DK GR BR	SA LO	mortar (discarded in field)
20.4	2	31-41	10YR 4/6	DK YL BR	SA SI	concrete; brick (discarded in field)
21.1	1	0-28	10YR 3/2	V DK GR BR	SA LO	coal (discarded in field)
21.1	2	28-61	10YR 4/6	DK YL BR	SA	coal (discarded in field)
21.2	1	0-38	10YR 3/2	V DK GR BR	SA LO	brick; siding (discarded in field)
21.2	2	38-62	10YR 4/6	DK YL BR	SA	brick; siding; mortar (discarded in field)
21.3	1	0-12	N/A	N/A	N/A	wood chip layer; NCM
21.3	2	12-42	10YR 3/2	V DK GR BR	SA LO	NCM
21.3	3	42-60	10YR 4/6	DK YL BR	SA	NCM
21.4	1	0-7	10YR 3/1	V DK G R	SA LO	NCM; concrete impasse at 7cm
22.1	1	0-38	10YR 3/2	V DK GR BR	LO SA	brick (discarded in field); glass; redware (collected)

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
22.1	2	38-62	10YR 4/6	DK YL BR	LO SA	coal (discarded in field)
22.2	1	0-36	10YR 3/2	V DK GR BR	LO SA	coal; coal ash (discarded in field)
22.2	2	36-60	10YR 4/6	DK YL BR	LO SA	drainage tile
22.3	1	0-33	10YR 3/2	V DK GR BR	LO SA	NCM
22.3	2	33-59	10YR 4/6	DK YL BR	LO SA	burnt wood (discarded in field)
22.4	1	0-45	10YR 3/2	V DK GR BR	SA LO	aluminum siding (discarded in field)
22.4	2	45-55	10YR 4/6	DK YL BR	SA	NCM
23.1	1	0-43	10YR 3/2	V DK GR BR	SA LO	flat glass (discarded in field)
23.1	2	43-61	10YR 5/6	YL BR	LO SA	NCM
23.2	1	0-29	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field);
23.2	2	29-60	10YR 5/6	YL BR	LO SA	NCM
23.3	1	0-46	10YR 4/2	DK GR BR	SA LO	NCM
23.3	2	46-60	10YR 5/6	YL BR	LO SA	NCM
23.4	1	0-38	10YR 4/2	DK GR BR	SA LO	NCM; cable impasse at 38cm
24.1	1	0-32	10YR 3/1	V DK G R	SA LO	NCM
24.1	2	32-60	2.5Y 6/4	LT YL BR	SA CL	NCM
24.2	1	0-33	10YR 3/1	V DK G R	SA LO	NCM
24.2	2	33-60	2.5Y 6/4	LT YL BR	SA CL	NCM
24.3	1	0-39	10YR 3/1	V DK G R	SA LO	NCM
24.3	2	39-49	2.5Y 6/4	LT YL BR	SA CL	NCM; root impasse at 49cm
24.4	1	0-30	10YR 3/1	V DK G R	SA LO	NCM; root impasse at 30cm
24.5	1	0-37	10YR 3/2	V DK GR BR	SA LO	NCM
24.5	2	37-49	10YR 4/6	DK YL BR	SA CL	NCM
24.6	1	0-20	10YR 3/1	V DK G R	SA LO	NCM; root impasse at 20cm
25.1	1	0-37	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
25.1	2	37-61	10YR 7/2	LT GR	SA	styrofoam; brick (discarded in field)
25.2	1	0-12	10YR 3/1	V DK G R	SA LO	NCM
25.2	2	12-28	10YR 3/2	V DK GR BR	SA SI	brick (discarded in field)
25.2	3	28-62	7.5YR 5/6 10YR 5/1	STRONG BR GR	SA	NCM; 10-15% gravel
25.3	1	0-38	10YR 3/2	V DK GR BR	SA LO	NCM; 10% gravel
25.3	2	38-60	10YR 5/6	YL BR	SA	NCM; 15% gravel
25.4	1	0-36	10YR 4/2 10YR 5/6	DK GR BR YL BR	SA	styrofoam; plastic; concrete; coal; coal ash (discarded in field); rock impasse at 36cm
26.1	1	0-17	10YR 3/2	V DK GR BR	SA LO	NCM
26.1	2	17-30	10YR 4/2	DK GR BR	SA LO	ceramic; glass
26.1	3	30-60	10YR 5/6	YL BR	LO SA	NCM
26.1+1mS	1	0-47	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); root impasse at 47cm
26.1+1mN	1	0-20	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field)
26.1+1mN	2	20-60	10YR 5/6	YL BR	SA LO	brick; coal (discarded in field)
26.1+3mN	1	0-27	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field)
26.1+3mN	2	27-40	10YR 5/6	YL BR	SA LO	NCM; root impasse at 40cm
26.2	1	0-25	10YR 3/2	V DK GR BR	SA LO	NCM; rock impasse at 25cm
26.3	1	0-32	10YR 4/2	DK GR BR	SA LO	brick; flat glass (discarded in field); glass; whiteware (collected)
26.3	2	32-60	10YR 5/6	YL BR	LO SA	NCM
26.3+1mN	1	0-33	10YR 3/2	V DK GR BR	SA LO	NCM
26.3+1mN	2	33-47	10YR 4/2	DK GR BR	SA	glass; whiteware
26.3+1mE	1	0-31	10YR 3/2	V DK GR BR	SA LO	candy wrapper (discarded in field)
26.3+1mE	2	31-50	10YR 4/2	DK GR BR	SA	NCM
26.3+3mE	1	0-19	10YR 3/2	V DK GR BR	SA LO	NCM
26.3+3mE	2	19-31	10YR 4/2	DK GR BR	SA	NCM
26.3+3mS	1	0-32	10YR 3/2	V DK GR BR	SA LO	NCM
26.3+3mS	2	32-48	10YR 4/6	DK YL BR	SA SI	NCM
27.1	1	0-38	10YR 3/2	V DK GR BR	SA LO	plastic (discarded in field)
27.1	2	38-60	10YR 5/4	YL BR	SA LO	slag; brick fragments (discarded in field)
27.2	1	0-15	10YR 3/1	V DK GR	SA LO	mortar; brick fragments

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
27.2	2	15-36	10YR 6/4	LT YL BR	SA	gravel; foundation pcs; fill/rock impasse at 36cm
27.3	1	0-31	10YR 3/2	V DK GR BR	SA LO	brick fragments; slag (discarded in field)
27.3	2	31-43	10YR 5/4	YL BR	SA	gravel; mortar; coal; brick fragments; (discarded in field) fill/rock impasse at 46cm
27.4	1	0-12	10YR 3/1	V DK GR	SA LO	NCM
27.4	2	12-60	7.5YR 5/6 10YR 5/4	STRONG BR YL BR	SA CL	brick fragments; coal (discarded in field)
27.5	1	0-22	10YR 3/1	V DK GR	SA LO	brick fragments (discarded in field)
27.5	2	22-42	10YR 5/4	YL BR	SA	brick fragments (discarded in field); rubble/rock impasse at 42cm
27.6	1	0-10	10YR 3/1	V DK GR	SA LO	NCM; driveway/foundation impasse at 10cm
28.1	1	0-28	10YR 3/1	V DK GR	SA SI	NCM
28.1	2	28-39	10YR 5/4	YL BR	SA LO	NCM; root impasse at 39cm
28.2	1	0-28	10YR 3/1	V DK GR	SA SI	NCM
28.2	2	28-60	7.5YR 5/6 10YR 5/4	STRONG BR YL BR	SA LO	coal; slag; brick; plastic bag (discarded in field)
28.3	1	0-32	10YR 3/1	V DK GR	SA SI	NCM
28.3	2	32-49	10YR 5/6	YL BR	SA	coal; slag (discarded in field); root impasse at 49cm
28.4	1	0-30	10YR 3/2	V DK GR BR	SA SI	NCM
28.4	2	30-61	10YR 5/6	YL BR	SA	slag (discarded in field)
28.5	1	0-30	10YR 3/2	V DK GR BR	SA SI	NCM
28.5	2	30-58	10YR 5/6	YL BR	SA	slag; brick; flat glass (discarded in field)
28.6	1	0-31	10YR 3/2	V DK GR BR	SA SI	NCM
28.6	2	31-49	10YR 4/6	DK YL BR	SA	NCM; root impasse at 49cm
28.7	1	0-27	10YR 3/2	V DK GR BR	SA SI	NCM
28.7	2	27-39	10YR 4/6	DK YL BR	SA	NCM
28.7	3	39-59	10YR 2/1	BL	SA	NCM
29.1	1	0-19	10YR 3/2	V DK GR BR	SA LO	coal (discarded in field)
29.1	2	19-27	10YR 3/2 10YR 5/6	V DK GR BR YL BR	SA LO	coal (discarded in field)
29.2	1	0-19	10YR 3/2	V DK GR BR	SA LO	coal (discarded in field)
29.2	2	19-26	10YR 3/2 10YR 5/6	V DK GR BR YL BR	SA LO	coal; slag (discarded in field)
29.2	3	26-36	10YR 3/2	V DK GR BR	SA CL	slag (discarded in field)
29.2	4	36-60	10YR 5/6	YL BR	SA LO	NCM
29.3	1	0-36	10YR 3/2	V DK GR BR	SA LO	glass (collected); coal ash (discarded in field)
29.3	2	36-60	10YR 3/2 10YR 3/1	V DK GR BR V DK GR	SA CL	coal; mortar (discarded in field)
29.4	1	0-23	10YR 3/1	V DK GR	SA LO	coal (discarded in field)
29.4	2	23-38	10YR 4/2	DK GR BR	SA LO	NCM; rock/fill impasse at 38cm
29.5	1	0-30	10YR 3/2	V DK GR BR	SA LO	coal (discarded in field)
29.5	2	30-38	10YR 5/6 10YR 3/1	YL BR V DK GR	SA LO	NCM; root/rock/fill impasse at 38cm
29.6	1	0-26	10YR 3/2	V DK GR BR	SA LO	brick; coal (discarded in field)
29.6	2	26-60	10YR 5/6	YL BR	SA LO	NCM; gravel
29.7	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 26cm
30.1	1	0-35	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field)
30.1	2	35-59	10YR 5/6	YL BR	SA	slag (discarded in field)
30.2	1	0-30	10YR 4/2	DK GR BR	SA LO	NCM
30.2	2	30-38	2.5YR 4/6	RD	CL	NCM
30.2	3	38-59	10YR 5/4	YL BR	SA	NCM
30.3	1	0-28	10YR 4/2	DK GR BR	SA LO	NCM
30.3	2	28-35	10YR 5/6	YL BR	SA	NCM; concrete/asphalt impasse at 35cm
30.4	1	0-32	10YR 3/2	V DK GR BR	SA LO	NCM

Shovel Test Log for Brooklyn Navy Yard, Phase IB

Transect/ STP	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
30.4	2	32-50	10YR 5/6	YL BR	SA	coal; slag (discarded in field); root impasse at 50cm
30.5	1	0-37	10YR 3/2	V DK GR BR	SA LO	NCM
30.5	2	37-49	10YR 5/6	YL BR	SA	NCM; root impasse at 49cm
30.6	1	0-40	10YR 3/2	V DK GR BR	SA LO	NCM
30.6	2	40-60	10YR 5/3	BR	SA CL	NCM
31.1	1	0-36	10YR 3/1	V DK GR	SA LO	brick (discarded in field);
31.1	2	36-46	2.5YR 4/6	RD	LO SA	brick fragments
31.1	3	46-60	10YR 3/1	V DK GR	LO SA	brick (discarded in field)
31.2	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM
31.2	2	26-36	2.5YR 4/6	RD	SA CL	NCM
31.2	3	36-50	7.5YR 6/6	RD YL	SA LO	NCM
31.3	1	0-27	10YR 3/2	V DK GR BR	SA LO	NCM
31.3	2	28-37	2.5YR 4/6	RD	SA CL	NCM
31.3	3	37-56	7.5YR 6/6	RD YL	SA LO	NCM; fill impasse at 56cm
31.4	1	0-26	10YR 3/2	V DK GR BR	SA LO	NCM
31.4	2	26-36	2.5YR 4/6	RD	SA CL	NCM
31.4	3	36-58	7.5YR 6/6	RD YL	SA LO	NCM; rock/fill impasse at 58cm
31.5	1	0-26	10YR 3/1	V DK GR	SA LO	NCM
31.5	2	26-38	7.5YR 5/6	STRONG BR	SA LO	NCM
31.5	3	38-60	10YR 3/1	V DK GR	SA LO	NCM
31.6	1	0-32	10YR 3/2	V DK GR BR	SA LO	slag; brick fragments (discarded in field)
31.6	2	32-60	10YR 5/6	YL BR	SA CL	slag; brick fragments (discarded in field)
32.1	1	0-18	10YR 4/2	DK GR BR	SA LO	NCM
32.1	2	18-38	7.5YR 6/6	RD YL	SA	NCM; root/rock impasse at 38cm
32.2	1	0-28	10YR 4/2	DK GR BR	SA LO	NCM
32.2	2	28-40	7.5YR 6/6	RD YL	SA	NCM; rock impasse at 40cm
32.3	1	0-25	10YR 4/2	DK GR BR	SA LO	NCM
32.3	2	25-60	7.5YR 6/6	RD YL	SA	NCM
32.4	1	0-27	10YR 4/2	DK GR BR	SA LO	flat glass (discarded in field)
32.4	2	27-62	7.5YR 6/6	RD YL	SA	NCM
32.5	1	0-35	10YR 3/2	V DK GR BR	SA LO	ceramic
32.5	2	35-50	10YR 4/2	DK GR BR	LO SA	NCM
33.1	1	0-24	10YR 3/2	V DK GR BR	SA LO	NCM
33.1	2	24-60	10YR 5/6	YL BR	SA	NCM
33.2	1	0-20	10YR 3/2	V DK GR BR	SA LO	NCM
33.2	2	20-45	10YR 4/6	DK YL BR	SA	coal; slag (discarded in field); rock impasse at 45cm
33.3	1	0-30	10YR 3/2	V DK GR BR	SA LO	NCM
33.3	2	30-49	10YR 4/6	DK YL BR	SA	coal; slag (discarded in field); rock impasse at 49cm
34.1	1	0-60	10YR 3/2	V DK GR BR	SA LO	brick fragments (discarded in field); slate roof pieces; ceramic (collected); level of excavation reached
34.2	1	0-36	10YR 3/2	V DK GR BR	SA LO	NCM
34.2	2	36-60	10YR 5/4	YL BR	SA LO	NCM
35.1	1	0-30	10YR 4/2	DK GR BR	SA LO	NCM
35.1	2	30-40	10YR 6/4	LT YL BR	LO SA	NCM; root impasse at 40cm
35.2	1	0-27	10YR 4/2	DK GR BR	SA LO	NCM; root impasse at 27cm
35.3	1	0-21	10YR 4/2	DK GR BR	SA LO	NCM; root impasse at 21cm
35.4	1	0-32	10YR 4/2	DK GR BR	SA LO	NCM; 60% gravel
35.4	2	32-50	10YR 6/4	LT YL BR	LO SA	NCM; rock impasse at 50cm
36.1	1	0-32	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 32cm
36.2	1	0-31	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 31cm
36.3	1	0-34	10YR 3/2	V DK GR BR	SA LO	NCM; root impasse at 34cm
37.1	1	0-36	10YR 3/1	V DK GR	SA LO	ceramic
37.1	2	36-61	10YR 5/6	YL BR	SA SI	NCM; 15% gravel; roots
37.2	1	0-31	10YR 2/2	V DK BR	SA SI	NCM
37.2	2	31-44	10YR 4/6	DK YL BR	SA	NCM

Appendix B
ARTIFACT CATALOG

Phase IB Artifact Catalog for Admiral's Row, Brooklyn Navy Yard

Trench/ STP	Stratum	Count	Material	Type	Class	Description
Geomorphological Investigation						
Trench 1	(0-150 cm bs)	1	ceramic	ironstone	rim fragment	from a large undecorated bowl or serving vessel
Trench 1	(0-150 cm bs)	3	ceramic	pearlware	body fragment	1 with blue transfer-printed landscape design, 1 with hand-painted polychrome decoration, and 1 undecorated
Trench 1	(0-150 cm bs)	1	ceramic	pearlware	rim fragment	blue transfer-printed geometric design, from a bowl or serving vessel
Trench 1	(0-150 cm bs)	1	ceramic	porcelain	base fragment	from a footed vessel, possibly a saucer or plate
Trench 2		1	ceramic	creamware	rim fragment	blue transfer-printed decoration on a molded rim
Trench 2		1	ceramic	ironstone	base fragment	small fragment from a footed vessel
Trench 2		2	ceramic	ironstone	body fragment	1 with annular band; 1 undecorated
Trench 2		2	ceramic	ironstone	rim fragment	1 from an undecorated cup/mug; 1 from a plate or saucer with molded decoration
Trench 2		1	ceramic	porcelain	body fragment	undecorated
Trench 2		1	glass	container		aqua glass
Trench 2		1	glass	container		olive glass
Trench 2		1	glass	insulator		aqua glass
Trench 4		1	ceramic	pearlware	body fragment	blue transfer-print decoration
Trench 4		1	ceramic	pearlware	rim fragment	blue transfer-print, geometric design with flowers
Trench 5		1	brick			maker's mark reads "SHAMROCK"
Trench 5		1	ceramic	stoneware	body fragment	salt-glazed
Trench 6		1	ceramic	creamware	body fragment	undecorated
Trench 6		2	ceramic	ironstone	body fragment	both undecorated, 1 possibly includes a portion of a foot
Trench 6		1	glass	flat		green plate glass, approx. 9/16-in thick
Trench 6		1	metal	compound		heavy-gauge copper-sheathed wire, 6-in length
Trench 6		1	metal	iron		unidentifiable fragment, possibly a fastener
Trench 6		4	misc	leather		shoe sole fragments
Trench 7	9	3	bone	mammal		long bone fragments, 1 is possibly from a handle, 1 is burned and partially calcined, and 1 is a cut fragment
Trench 7	9	1	ceramic	creamware	base fragment	undecorated, from a footed vessel
Trench 7	9	4	ceramic	creamware	rim fragment	3 blue transfer-printed decoration (1 from a bowl or serving dish, 2 from a vessel of indeterminate size); 1 plain from a shallow bowl or serving vessel
Trench 7	9	5	ceramic	ironstone	body fragment	1 with flow blue transfer-printed decoration; 4 undecorated
Trench 7	9	7	ceramic	ironstone	rim fragment	1 with polychrome transfer-printed and hand-painted floral deocoration, possibly from a vase; 4 are from shallow vessels with molded decoration; 1 is from a bowl with a plain rim; and 1 is a burned fragment with adhered iron slag
Trench 7	9	2	ceramic	pearlware	body fragment	1 blue transfer-printed decoration, possibly from a serving bowl or tea pot; 1 with hand-painted blue decoration
Trench 7	9	3	ceramic	pearlware	body fragment	undecorated
Trench 7	9	3	ceramic	pearlware	rim fragment	1 from a saucer or plate, blue transfer-print decoration showing an exotic building; 1 from a serving bowl or dish, blue shell-edge, scalloped rim with impressed curved lines (1795-1845); 2 with flow black decoration (indeterminant vessel type)
Trench 7	9	2	ceramic	porcelain	base fragment	1 from a footed saucer with molded decoration; 1 from a footed vessel of indeterminant type

Phase IB Artifact Catalog for Admiral's Row, Brooklyn Navy Yard

Trench/ STP	Stratum	Count	Material	Type	Class	Description
	Key: bs = below surface					
Geomorphological Investigation (continued)						
Trench 7	9	1	ceramic	porcelain	rim fragment	saucer or plate with purple pate-sur-pate-like decoration
Trench 7	9	1	ceramic	slipware	rim fragment	impressed design along rim edge; a single trail is present
Trench 7	9	1	ceramic	stoneware	base fragment	base fragment from a square, footed vessel; buff-glazed exterior, white-glazed interior, gold-leaf decoration
Trench 7	9	6	ceramic	stoneware	body fragment	3 salt-glazed, undecorated body sherd, brown slip interior (at least 2 vessels); 1 salt-glazed from a ginger beer bottle; 1 salt-glazed, buff interior and exterior; 1 with brown glaze on one side, buff salt-glaze on the other
Trench 7	9	1	ceramic	stoneware	misc	molded with some salt glaze; possibly a waster
Trench 7	9	5	ceramic	whiteware	base fragment	4 fragments from a large flat-bottomed footless vessel; 1 fragment from a vessel with blue transfer-printed decoration, floral motif
Trench 7	9	5	ceramic	whiteware	body fragment	undecorated
Trench 7	9	2	ceramic	whiteware	rim fragment	1 blue transfer-printed decoration; 1 molded
Trench 7	9	2	ceramic	yelloware	body fragment	1 with glazed interior; 1 with plain (unglazed) interior
Trench 7	9	2	glass	flat		1 aqua, 1 green
Trench 7	9	1	glass	milk glass		molded
Trench 7	9	1	metal	iron		heavy-gauge hardware, possibly a bolt
Trench 7	9	1	metal	iron		industrial-gauge fastener, approx. 11 in long
Geoprobe 18		1	ceramic	pearlware	rim fragment	blue transfer-print, geometric design flagment, decoration on interior and exterior surfaces
Archaeological Investigation						
3.1	1	1	ceramic	stoneware	body fragment	salt-glazed
4.1	1	1	glass	flat		aqua
4.1	1	3	ceramic	red salt-glazed	misc	utility pipe fragment
4.1	2	1	metal	iron		unidentifiable fragment
4.1	2	1	ceramic	redware	misc	unglazed, probably a tile fragment
5.2	1	2	glass	flat		green; likely modern
7.2	1	1	glass	container	base fragment	clear glass; bottle fragment; ovoid section; mold lines from a 3-piece process; embossed stippling around periphery of base; embossed label "L O 2029"; likely modern
7.6	2	1	ceramic	whiteware	rim fragment	undecorated
8.2	1	1	ceramic	pearlware	body fragment	flow blue, leaves and berries
8.7	1	1	metal	brass		punched crescent-shaped piece of medium-gauge sheet brass, 19 mm diameter
9.3	1	1	glass	container		clear, possibly from a drinking glass
9.3	1	1	glass	container		aqua, very subtle curvature
9.4	1	1	glass	flat		green; likely modern
11.3	1	1	ceramic	pearlware	body fragment	blue hand-painted design, possibly from a tea pot or a serving vessel
11.3+1mS	1	1	glass	container		clear, mold line
11.3+1mS	1	1	ceramic	creamware	body fragment	undecorated
12.2	1	5	glass	flat		2 clear, 3 aqua, fragments have varying thicknesses
12.2	2	1	ceramic	pearlware	handle/lug	molded geometric or floral design
12.2	2	1	ceramic	i-vitreous c	rim fragment	undecorated
12.2+1mW	1	1	glass	container		clear

Phase IB Artifact Catalog for Admiral's Row, Brooklyn Navy Yard

Trench/ STP	Stratum	Count	Material	Type	Class	Description
16.4	1	1	glass	flat		aqua
Archaeological Investigation (continued)						
16.4	1	1	ceramic	whiteware	body fragment	burned, possibly was hand-painted
16.4+3mS	2	1	ceramic	creamware	rim fragment	annular ware, brown decoration
16.4+3mS	2	1	ceramic	redware		salt-glazed, possibly from a utility
18.1	2	1	glass	container		clear, mold line, embossed label partially reading "16 FL. O…", molded decorative flutes also present; likely modern
18.1	2	1	ceramic	terracotta	base fragment	flower pot
18.1	2	1	compound			fragment of mortar with adhered plaster
19.1	2	1	glass	flat		clear
19.1	2	1	ceramic	i-vitreous c	rim fragment	undecorated
19.1+3mN	2	1	metal	iron		square-cut spike, heavy-gauge (possibly railroad)
19.3	1	1	glass	container		olive
19.4	1	1	plastic	button		faux mother-of-pearl, 4 holes
19.4	1	1	glass	flat		aqua
19.4	1	1	ceramic	whiteware		blue transfer-print decoration, possibly from a saucer
19.4+1mN	2	1	glass	flat		clear
19.4+1mN	2	1	ceramic	terracotta	body fragment	flower pot
19.4+3mS	2	1	glass	container		olive
19.4+3mS	2	1	ceramic	porcelain	rim fragment	burned, no discernable decoration
19.4+3mS	2	1	glass	flat		clear
19.4+3mW	2	1	ceramic	whiteware	body fragment	undecorated
20.1	1	1	glass	container		clear, embossed label partially reading "LI"
20.1	1	4	glass	flat		green
22.1	1	1	glass	container		green with molded stipple design; likely modern
22.1	1	1	glass	container		clear; likely modern
22.1	1	1	ceramic	terracotta	body fragment	flower pot
22.2	2	1	ceramic	redware		salt-glazed, from a utility pipe
23.2	1	2	glass	flat		1 aqua, 1 clear
23.2	1	1	ceramic	porcelain	misc	from a decorative vessel or porcelain doll; small fragment with glazed exterior and unglazed interior
23.2	1	1	ceramic	redware	body fragment	salt-glazed interior, plain exterior; possibly from a utility
26.1	2	1	glass	container		clear
26.1	2	1	ceramic	creamware	body fragment	blue transfer-print decoration on both sides (leaf and floral design, respectively)
26.3	1	1	glass	container		aqua, from the shoulder of a vessel with an hexagonal cross section
26.3	1	1	ceramic	i-vitreous c	body fragment	undecorated
26.3+1mN	2	1	glass	flat		aqua
26.3+1mN	2	1	ceramic	whiteware	body fragment	undecorated, small fragment
29.3	1	1	glass	container		olive
31.1	1	1	ceramic	pearlware	base fragment	undecorated, very small
32.5	1	1	ceramic	redware		salt-glazed interior, plain exterior; possibly from a utility
34.1	1	1	ceramic	porcelain	base fragment	blue hand-painted design, footed vessel
34.1	1	1	lithic			slate fragment, possibly from a roof tile
37.1	1	1	ceramic	stoneware	body fragment	white salt glaze on one surface; other surface missing

Appendix C
SITE FORM

NEW YORK STATE HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

For Office Use Only--Site Identifier A04701.016569

Project Identifier _____ **Date** June 2, 2009
Your Name Donald A. Smith **Phone** (716) 821-1650
Address 2390 Clinton Street
Buffalo, NY 14227

Organization (if any) Panamerican Consultants, Inc.

1. **Site Identifier(s)** PCI/Admiral's Row
2. **County** Kings **One of following: City** Brooklyn
Township _____
Incorporated Village _____
Unincorporated Village or Hamlet _____

3. **Present Owner** U.S. Army National Guard Bureau (NGB)
Address 1411 Jefferson Davis Highway, Arlington, VA 22202-3231

4. **Site Description (check all appropriate categories):**
Structure/site
Superstructure: complete X **partial** X **collapsed** X **not evident**
Foundation: above X **below** **(ground level) not evident** _
__ **Structural subdivisions apparent**
__ **Only surface traces visible**
X **Buried traces detected**
List construction materials (be as specific as possible): Fifteen Admiral's Row buildings stand on the site and embody numerous construction methods and materials; see Phase IA report (Hanley et al. 2008).

Grounds
__**Under cultivation** __**Sustaining erosion** __**Woodland** __**Upland**
__**Never cultivated** __**Previously cultivated** __**Floodplain**
__**Pastureland** X **Mowed lawn**
Soil Drainage: excellent X **good** __ **fair** __ **poor** __
Slope: flat X **gentle** __ **moderate** __ **steep** __
Distance to nearest water from site (approx.) 400m (1312 ft)
Elevation: 10 ft amsl

5. **Site Investigation (append additional sheets, if necessary):**
Surface X **date(s)** 4/6-4/8/2009
X **Site Map (Submit with form*) see attachment**
__**Collection**

Subsurface--date(s) 4/6-4/8/2009
Testing: shovel X **coring** __ **other** _____ **unit size**
no. of units 167 **(Submit plan of units with form*)**

Excavation: unit size __ **no. of units** __ **(Submit plan of units with form*)**
*** Submission should be 8½"x11", if feasible.**

Investigator Donald A. Smith

Manuscript or published report(s) (reference fully):

Hanley, Robert J., Christine M. Longiaru, Mark A. Steinback, John Wah, and Michael A. Cinquino

2008 *Phase IA Cultural Resources Investigation for Admiral's Row Section Former Brooklyn Navy Yard, Brooklyn, Kings County, New York.* Prepared for Tetra Tech, Inc, Portland, Maine, under contract to US Army Corps of Engineers, New York District, New York, New York. Prepared by Panamerican Consultants, Inc., Buffalo, New York.

Smith, Donald A., Mark A. Steinback, John Wah, Sharon Jenkins, and Michael Cinquino

2009 *Phase IB Archaeological Cultural Resources Investigation for the Admiral's Row Section of the Former Brooklyn Navy Yard, Brooklyn, Kings County, New York.* Prepared for Tetra Tech, Inc, Portland, Maine, under contract to US Army Corps of Engineers, New York District, New York, New York. Prepared by Panamerican Consultants, Inc., Buffalo, New York.

Present repository of materials Panamerican Consultants, Inc.

6. Site inventory:

a. date constructed or occupation period mid 19th century to late 20th century

b. previous owners, if known

1637-ca. 1650s	Joris Jansen de Rapalje
early 1700s	Aert Aertsen (Middagh)
mid 1700s	Rem Remsen
1781-1801	John Jackson
1801-1966	US Navy

c. modifications, if known

Recent additions to the exterior and modifications to the interior (append additional sheets, if necessary)

7. Site documentation (append additional sheets, if necessary):

a. Historic map references (the project area appears on myriad historical maps of Brooklyn and New York City; a partial list is given below; see the above referenced reports for a more complete map list)

1) **Name** *Plan of the Town of Brooklyn and Part of Long Island.*
Date 1767 **Source** Stiles, Henry R. *A History of the City of Brooklyn, including the Old Town and Village of Brooklyn, the Town of Bushwick, and the Village and City of Williamsburgh.* Vol. I. Published by subscription, Brooklyn, NY, pp. 62-63.

2) **Name** *Hooker's New Pocket Plan of the Village of Brooklyn.* Compiled and surveyed by E.C. Ward. William Hooker, New York.
Date 1827 **Source** William Hooker, New York.

3) **Name** *City of New York*
Date 1833, 1834, 1835 **Source** B.S. Squire & W.V. LeCount, New York, on file at the New York Historical Society.

4) **Name** *Map of the City of Brooklyn.*
Date 1835 **Source** S.C. Herbert & R. Tolford, on file, Brooklyn Historical Society.

5) **Name** *City of New York.*
Date 1845 **Source** David Burr, Edward Walker, New York.

6) **Name** *Map of the Consolidated City of Brooklyn, comprising the City of Brooklyn, City of Williamsburgh, and Town of Bushwick, Kings County, Long Island.*
Date 1854 **Source** George Hayward, New York.

7) **Name** *Map of Brooklyn and Vicinity.*
Date 1864, 1869 **Source** Matthew Dripps, New York.

8) **Name** *Map of the City of Brooklyn and Vicinity.*
Date 1879 **Source** Matthew Dripps, New York.

9) **Name** *Plan of the U.S. Navy Yard, N.Y. Showing Improvements up to July 1, 1894.*
Date 1894 **Source** Brooklyn Navy Yard.

10) **Name** *Plan of the United States Navy Yard and Wallabout Basin. Part of Wards 11 & 12, Section 7, Atlas of the Borough of Brooklyn, City of New York.*
Date 1904 **Source** By and under the direction of Hugo Ullitz, C.E. Published by E. Belcher Hyde, Brooklyn, NY.

b. Representation in existing photography (there are numerous historical photographs of the site from the early twentieth century; see the Hanley et al. 2008 report referenced above)
1) Photo date ____ Where located
2) Photo date ____ Where located

c. Primary and secondary source documentation (reference fully)

Berner, Thomas F.
1999 *The Brooklyn Navy Yard*. Images of America Series. Arcadia Publishing, Charleston, South Carolina.

West, James H.
1941 *A Short History of the New York Navy Yard*. Ms. on file at the Brooklyn Historical Society, Brooklyn, NY.

Also see historic map references, above.

d. Persons with memory of site:
1) Name _____ Address

8. List of material remains other than those used in construction (be as specific as possible in identifying object and material): See Attachment ____
If prehistoric materials are evident, check here and fill out prehistoric site form. ____
A total of 167 shovel tests were dug at the site (116 at a 7.5-m interval and 51 radials). Twenty-one yielded a total of 28 domestic historical artifacts with a *terminus post quem* in the nineteenth century, including: 17 ceramic fragments (3 creamware, 3 pearlware, 2 porcelain, 3 semi-vitreous china; 1 stoneware, and 5 whiteware); 4 pieces of clear container glass (one of which is from a drinking glass and some of which may be modern); 3 fragments of olive container glass; 2 pieces of aqua container glass (one from a vessel with an hexagonal section); a fragment of medium-gauge sheet brass punched in a crescent shape; and a plastic faux mother-of-pearl button (*terminus post quem* ca. 1868). In addition, two domestic artifacts (both blue transfer-printed pearlware) were found in a Trench dug during an accompanying geomorphological investigation.

9. Map References: Map or maps showing exact location and extent of identified site must accompany this form and must be identified by source and date. Keep this submission to 8½"x11", if possible.

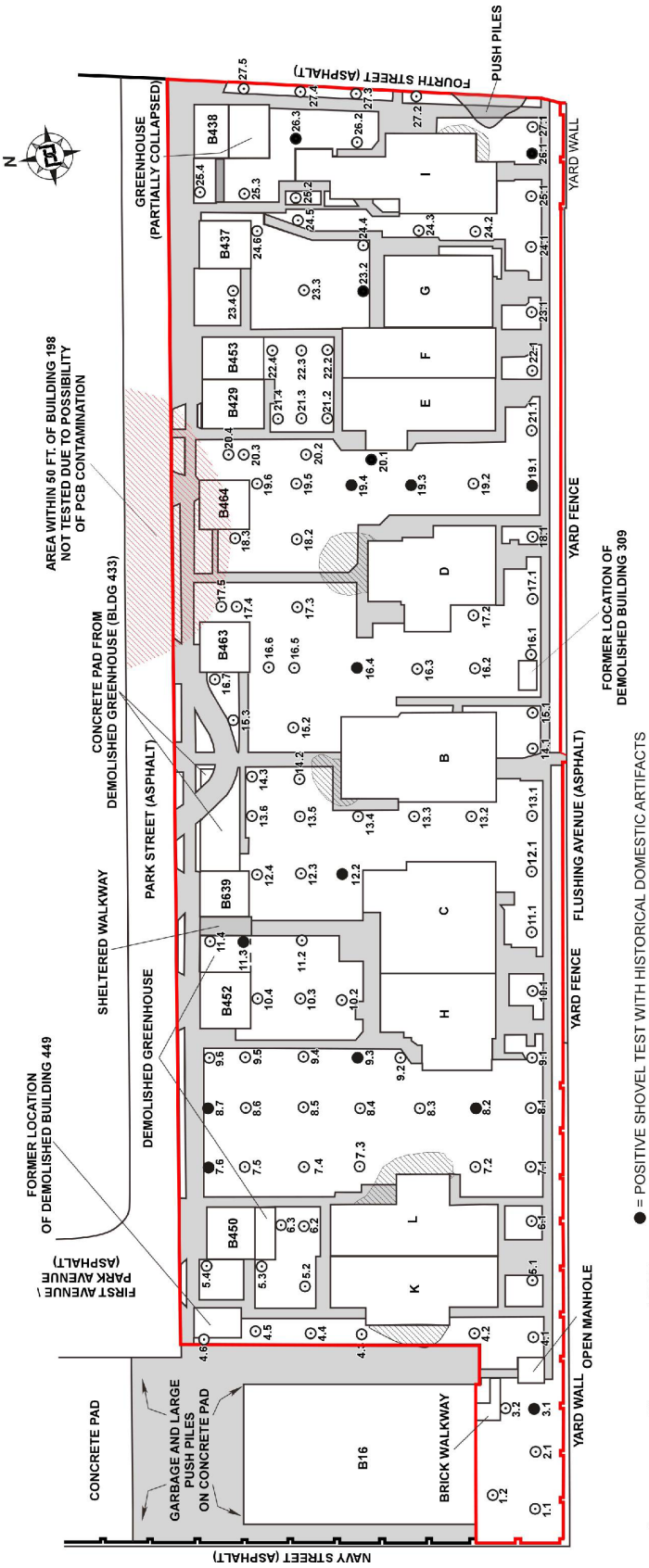
USGS 7½ Minute Series Quad. Name Brooklyn, NY
For or Office Use Only--UTM Coordinates _____

10. Photography (optional for environmental impact survey):
Please submit a 5"x7" black and white print(s) showing the current state of the site. Provide a label for the print(s)on a separate sheet.

NYS HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM
PCI/ADMIRAL'S ROW SITE (A04701.016569)

Location of the PCI/Admiral's Row Site in the City of Brooklyn, Kings County, New York
(USGS 7.5' Quadrangle, Brooklyn, NY 1980.

NYS HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM
PCI/ADMIRAL'S ROW SITE (A04701.016569)



PCI Admiral's Row Site, showing building layout and Phase IB shovel test configuration.

Appendix D
NYSHPO CORRESPONDENCE

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services • Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

www.nysparks.com

Eliot Spitzer
Governor

Carol Ash
Commissioner

December 17, 2007

Kristin Leahy
Cultural Resources Program Manager
National Guard Bureau
Attn: ARE-C
111 So. George Mason Drive
Arlington, VA 22204

Re: ARNG
Brooklyn Navy Yard Officers' Housing (Admirals Row)
Kings County
03PR05477

Dear Ms. Leahy:

Thank you for requesting the comments of the New York State Historic Preservation Office (NYSHPO) for the proposed work at Admirals Row at the Brooklyn Navy Yard. We have reviewed the submitted report in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon our review of the Beardsley and Design Associates and Crawford and Stearns, "Draft Assessment of Admiral's Row Buildings, Brooklyn Navy Yard" dated November 12, 2007 (Beardsley/Crawford Report) and our meeting on November 27, 2007 we offer the following comments:

1. We are very pleased with the level of detail and historic preservation expertise presented in the Beardsley/Crawford Report. It appears to present a comprehensive analysis of the historic structures and their existing condition.
2. Based upon our review of the Beardsley/Crawford Report our office concurs that the buildings at Admiral's Row, buildings B, C, D, E, F, G, H, I, K and L remain eligible for listing on the State and National Registers of Historic Places. These buildings contribute to a National Register-eligible historic district. We further concur that the buildings are eligible under Criteria A, B, C and D and are of national significance. We were surprised to learn of the existing brick timber shed located next to building K and its relative significance. Since the Beardsley/Crawford report did not address this building in detail, we request additional information regarding this resource to determine its eligibility for the State and National Registers of Historic Places.
3. In addition, our office concurs with the findings of the Beardsley/Crawford report that superstructures of the masonry buildings appear to be sound, level and plumb, showing areas of framing failures and masonry distress. In general, the buildings appear to be in much better condition than we previously believed. However, buildings C and F exhibit more severe structural concerns and the later 20th Century additions on all of the buildings are likely not salvageable due to major structural distress and failures. We further note that buildings B&D are of exceptional significance and attributed to architect Thomas U. Walter.
4. Comments regarding archeology are attached for your review.

At this point, it is our opinion that the 1996 MOA does not address the new findings provided in the Beardsley/Crawford Report particularly regarding the existing condition of the buildings superstructure. As you know, demolition of buildings eligible for the National Register is, by definition, an Adverse Effect. This finding triggers an exploration of prudent and feasible alternatives that might avoid or reduce project effects. As a matter of policy and practice, this exploration must occur before mitigation measures can be developed and before demolition can occur. We hope that appropriate alternatives will be considered including adaptive reuse and rehabilitation of the historic buildings and the site (including walls, fences, and landscape features). We are not opposed to the redevelopment of the site by the Brooklyn Navy Yard Redevelopment Corporation but it is critical that the alternatives analysis seriously consider how these nationally significant buildings can be creatively incorporated into the overall plan.

If you have any questions or if I can be of any assistance call me at (518) 237-8643, ext. 3282. Please refer to the SHPO Project Review (PR) number in any future correspondences regarding this project.

Sincerely,

Beth A. Cumming BAC
Historic Preservation Specialist – Technical Unit
e-mail: Beth.cumming@oprhp.state.ny.us

cc: Archeology comments

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

David A. Paterson
Governor

Carol Ash
Commissioner

June 24, 2008

Kristin Leahy
Cultural Resources Program Manager
National Guard Bureau
Attn: ARE-C
111 South George Mason Drive
Arlington, VA 22204

Re: ARNG
Brooklyn Navy Yard Officers' Housing (Admiral's Row)
Kings County
03PR05477

Dear Ms. Leahy:

Thank you for requesting the comments of the New York State Historic Preservation Office (NYSHPO) concerning the "Phase 1A Cultural Resources Investigation for Admiral's Row Section, Former Brooklyn Navy Yard" prepared by Panamerican Consultants. We have reviewed the submitted report in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

The report successfully addresses the research questions concerning the timber shed (building 16) raised by the Beardsley/Crawford & Stearns report. The pre-Civil War brick masonry and heavy timber naval industrial structure with gable roof and clerestory is a rare surviving example of its type that tells the story of the former shipbuilding activities at the Brooklyn Navy Yard. We concur that the building was most likely built ca. 1853 rather than the earlier date of ca. 1838 as previously reported. It is the opinion of the SHPO that the building meets the criteria for listing to the State/National Registers as a contributing resource within the larger context of the Brooklyn Navy Yard, one of this nation's most historically significant former naval stations. Though only a third of its original size, the timber shed demonstrates all seven aspects of integrity and meets Criterion A for its association with the development and industrial workings of the BNY from the pre-Civil War up to the 1940s, Criterion C as a rare surviving building type, and Criterion D for its potential to yield sub-surface information about the history of the site. As the only example of its type believed to survive both at the BNY and at the other original navy yards (Philadelphia, Boston, Portsmouth, Norfolk, Washington), the timber shed also appears to be individually eligible.

As previously noted, the houses that make up Admiral's Row (B, C, D, E, F, G, H, I, K and L) remain eligible for listing to the State/National Registers. Based on the additional research done by Panamerican at The Athenaeum of Philadelphia and the Architect of the Capitol in Washington, D.C., the SHPO

concurs that, to date, there is no conclusive evidence linking architect Thomas U. Walter with the design of any of the houses on Admiral's Row.

While Admiral's Row clearly meets the criteria for listing to the Registers as a historic district, it is important to stress that its history and thus, its period of significance, must relate to the larger context of the Brooklyn Navy Yard. Admiral's Row was an important historical compound throughout the history of the Brooklyn Navy Yard. It is SHPO's opinion that the period of significance for Admiral's Row Historic District should extend forward to include the Cold War period of 50 years ago. Admiral's Row was continuously occupied by military officers and their families for approximately 120 years.

While the officers' houses are the primary contributing features of the historic district and the chief focus of our preservation review, the ancillary structures and landscape features of the site contribute to the district due to their dates of construction. An important character-defining feature of the landscape of Admiral's Row is the highly visible brick walls and iron fence along the southern and western perimeters. Though of secondary importance, the detached garages (buildings 450, 452, 639, 463, 464, 429, 437, 438), shower room building (198), public works maintenance building (429), and Quarters J contribute to the district. Many of these ancillary structures appear to be in poor structural condition. Also historically related to the setting of Admiral's Row and thus considered contributing features are the tennis court (710), former parade ground and flagpole, and the streets including Park Avenue and Park Street with its mature hardwood trees on the north side.

Douglas Mackey, our archaeologist, offers the following comments:

1. Review of the various historic maps suggests that the boundaries of the "Seasoning Bay" changed over time. It is interesting to note that on the 1838 map (page 3-26, Brooklyn Historical Society) the boundaries of the bay seem to very well defined, possibly signifying a walled structure, yet the 1848 map (page 3-27, burr) shows the area still as the "Mill Pond" with more natural appearing boundaries. In 1854 (page 3-28, Hayward), the last time the Bay is depicted, the boundaries are smaller and very formalized, once again suggesting a possible walled structure. This boundary is different than shown in 1838 with the Bay being smaller in size, the boundaries further east and the Timber Shed is present in an area that was covered by the 1838 Bay. This change in boundary should be discussed with regard to how it may be expressed archaeologically, and the proposed testing plan should clearly indicate how their possible presence will be identified. The proposed testing plan already identifies several short trenches in this approximate area; however it may be helpful to lengthen each of these trenches, providing the opportunity to identify segments of both boundaries (walls?) in several locations.

2. The Phase 1B testing proposal does not identify any testing along the front of the Admiral's Row Structures near the street. This may be an important area to examine with regard to both the boundaries of the Seasoning Bay and the potential for Revolutionary War period shoreline. SHPO is aware that access to this area for mechanical vehicles is difficult, but we recommend that consideration be given to how the area may be accessed and examined with cores or by backhoe trenching.

3. The report does not provide any discussion on when public water and sewer access was provided to the area. This is an important consideration as access to such utilities would have likely led to them replacing privy and cistern systems. Understanding when this change occurred will provide significant information for both designing and interpreting Phase 1B testing associated with the occupation of the Admiral's Row Structures. SHPO recommends that this information be included and discussed in the final report.

If you have any questions about our comments please call me at (518) 237-8643, ext. 3266. Please refer to the SHPO Project Review (PR) number in any future correspondence regarding this project.

Sincerely,

Kathleen A Howe

Kathleen A. Howe
Historic Preservation Program Analyst – National Register Unit
email: kathy.howe@oprhp.state.ny.us

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1382

Chief, Environmental Programs Division

Ruth Pierpont, Director
New York State Office of Parks,
Recreation & Historic Preservation
Peebles Island, P.O. Box 189
Waterford, New York 12188-0189

RE: Admiral's Row, Brooklyn Navy Yard, Draft Phase IB Archaeological Report

Dear Ms. Pierpont:

The National Guard Bureau (NGB) is pleased to furnish you with a copy of the draft report, Phase IB Archaeological Report for the Admiral's Row Section – Former Brooklyn Navy Yard, Brooklyn, Kings County, New York.

The NGB has determined the Area of Potential Effect (APE), as outlined in the Phase IA Report, to be the entire area (approximately 6 acres) that will be transferred from Federal ownership to non-Federal ownership.

The NGB has concerns with the conclusions and recommendations of the Phase IB Report, based on the number of domestic artifacts excavated and the absence of any historical features uncovered by trenching and shovel tests. The NGB would like to coordinate a meeting with your office to discuss these recommendations on June 15, 2009 if possible.

In addition, in keeping with Section 106 of the National Historic Preservation Act, the NGB requests a formal review of the enclosed draft report and your comments by July 8, 2009. If you have any questions, please contact Kristin Leahy, NGB Cultural Resources Program Manager at 703-607-7190 or Kristin.Leahy@us.army.mil.

Sincerely,

Beth A Erickson
Chief, Training and Infrastructure Branch

Encl
as

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

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Governor

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New York State Office of Parks, Recreation and Historic Preservation

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518-237-8643
www.nysparks.com

July 24, 2009

Kristin Leahy
Cultural Resources Program Manager
National Guard Bureau
Attn: ARE-C
111 South George Mason Drive
Arlington, VA 22204

Re: ARNG
Brooklyn Navy Yard Officers' Housing (Admiral's Row)
Kings County
03PR05477

Dear Ms. Leahy:

Thank you for requesting the comments of the New York State Historic Preservation Office (NYSHPO) concerning the "Phase 1B Archaeological Cultural Resources Investigation for the Admiral's Row Section of the Former Brooklyn Navy Yard, Brooklyn, Kings County, New York" prepared by Panamerican Consultants in June 2009. We have reviewed the report in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

The report identifies the PCI/Admiral's Row Historic Archaeological Site which contains archaeological deposits associated with the utilization of the Admiral's Row Structures. SHPO recognizes this identification and has assigned Unique Site Number A04701.016569 to these deposits. SHPO concurs with the recommendations of the report for Phase II investigation of this site to determine if any subsurface features are present which may contain significant deposits. While the report recommends GPR study combined with Shovel testing to identify and investigate possible features, SHPO would recommend that other approaches may be appropriate in addition. Although GPR can be very useful, it's effectiveness depends on many factors, including soil moisture and the composition of the soil matrix. Therefore, given the high probability that features are present, SHPO would recommend that any Phase II testing plan also include provisions for stripping areas of the site to search for features. This may not be necessary if the GPR proves successful, however if there are problems, SHPO would suggest being prepared to utilize alternative techniques as well.

With regard to the geomorphological study, the results confirm the general consensus that much of the site sits on mid 19th century fill, however two specifc concerns previously raised to not seem to have been addressed and there is a problem with the mapping in the report. First, due to limitations created by equipment access, no deep testing was conducted toward the "front" of the property, in an area where SHPO feels it is important to establish if the original bay covered the entire project area. SHPO continues to recommend that some approach be found which can address this question. Second, while it is clear that fill is present, it has not been established whether there are any structural remains present that relate to sectioning a part of the original bay into a separate pond as identified on several early maps. It is possible that GPR study may be able to address this question as well, otherwise SHPO would suggest excavation of a single long trench designed to cross the most likely area for such structural remains.

A site-wide comparison of the soil bore results might have been able to provide data to address this question, however the text suggests that the soils were similar in all bores (not unexpected even if structural remains are intact) and SHPO was unable to identify which cores come from which locations as the map identifying soil bore locations (Figure 5) depicts multiple locations as GP-1 (9 instances), GP-2 (9 instances), and GP-3 (4 instances). Therefore, we were not able to review the details ourselves.

I would also like to take this opportunity to raise a concern regarding the recently published RFP being circulated for proposed development. Although I did not attend the last meeting, it was my understanding that the issue of possible additional archaeological work (mitigation?) would be a responsibility passed on to the selected development company, however, it does not appear that this is made clear in the RFP. Can you please clarify your understanding of who is likely to be responsible for conducting any necessary mitigations associated with archaeological properties if they are needed.

SHPO recommends that the issues discussed above be addressed. Please contact me at extension 3291, or by e-mail at douglas.mackey@oprhp.state.ny.us, if you have any questions regarding these comments.

Sincerely

Douglas P. Mackey
Historic Preservation Program Analyst
Archaeology

Appendix E
HUMAN REMAINS DISCOVERY PROTOCOL

New York Office of Parks, Recreation and Historic Preservation/
State Historic Preservation Office
Human Remains Policy

In the event that suspected human remains are encountered during construction, the State Historic Preservation Office requires that the following protocol is implemented:

- At all times human remains must be treated with the utmost dignity and respect. Should human remains be encountered work in the general area of the discovery will stop immediately and the location will immediately be secured and protected from damage and disturbance.

- Human remains or associated artifacts will be left in place and not disturbed. No skeletal remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place and a plan of action has been developed.

- The county coroner and local law enforcement as well as the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the involved agency will be notified immediately. The coroner and local law enforcement will make the official ruling on the nature of the remains, being either forensic or archeological. If the remains are archeological in nature, a bioarchaeologist will confirm the identification as human.

- If human remains are determined to be Native American, the remains will be left in place and protected from further disturbance until a plan for their protection or removal can be generated. The involved agency will consult OPRHP and appropriate Native American groups to determine a plan of action that is consistent with the Native American Graves Protection and Repatriation Act (NAGPRA) guidance.

- If human remains are determined to be Euro-American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. Consultation with the OPRHP and other appropriate parties will be required to determine a plan of action.

Appendix F
GEOMORPHOLOGICAL INVESTIGATION BORING AND TRENCH LOGS

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP1	Date: January 20, 2009	
Location: NW corner of project area, 9 m E of W boundary, 6 m S of N boundary		
Lat.: N40º42.099'	Long.: W73º58.709'	
Parent material: Fill over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 125 cm	
Notes: Organic surface, tidal marsh at 320 cm; not able to recover saturated sediments below 375 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-70	FILL	Mixed N2.5 10YR2/2	VGR SL	55	Concrete slab 2-27 cm, floor of woodshed? ash and cinder
70-110	FILL	Mixed 10YR4/6	GR SL	20	
110-125	FILL	N2.5	GR LS	20	
125-225	FILL	7.5YR4/6	GR LS	20	
225-320	FILL	2.5Y5/4	LS	10	
320-335	Oe	7.5YR3/3	-	-	Tidal marsh surface
335-345	Cg1	2.5Y6/1	S	-	Fluvial/estuarine
345-375	Cg2	10YR4/2	S	-	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP2	Date: January 20, 2009	
Location: 15 m E of W boundary, 10 m S of N boundary		
Lat.: N40º41.963	Long.: W73º58.805	
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 131 cm	
Notes: No organic marsh surface present in boring; no recovery of saturated sands below 415 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-81	FILL	Mixed N2.5	VGR SL	50	Concrete slab 2-22 cm, woodshed floor?
81-131	FILL	Mixed 7.5YR4/6 10YR4/3	Mixed GR SL	20	
131-156	FILL	7.5YR4/6	GR SL	20	
156-311	FILL	10YR5/4	LS	10	Angular gravels, brick fragments
311-415	?	10YR4/3	S	1	Probably fill; organic lenses, N2.5, 370-377 cm and 400-408 cm with macroorganics

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP3	Date: January 20, 2009	
Location: 25 m E of W boundary, 10 m S of N boundary on Park Ave.		
Lat.: N40º41.960'	Long.: W73º58.805'	
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water:	
Notes: No marsh surface; refused on wood – possibly vertical – at 274 cm, possibly wall of the pond		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-34	FILL	Mixed N2.5 10YR2/1	VGR SL	50	12-22 cm concrete slab of road
34-99	FILL	Mixed 10YR4/4 7.5YR4/6	GR SL	20	Angular gravel lens at base (concrete?)
99-269	FILL	Mixed 10YR4/4 10YR4/2	GR S	20	
269-274	-	-	-	-	Big piece of wood (vertical?)

Geoprobe Log		
Project: BNY		Client: Panamerican Consultants, Inc.
Area: GP4		Date: January 20, 2009
Location: 40 m E of W boundary, 12 m S of N boundary; E side of Park Ave		
Lat.: N40º41.960'		Long.: W73º58.790'
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		Gr. Water: 188 cm
Notes: Fine lacustrine sediments deposited in still water environment 372-462 cm; very nice organic marsh surface 462-492 cm; tidal marsh under pond		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-68	FILL	Mixed 10YR2/2 10YR4/6	SL	5	Few large roots
68-158	FILL	Mixed 10YR4/6 10YR3/3	GR SL	20	10 cm lens 5YR4/6 at top
158-188	FILL	10YR4/2	GR S	20	
188-218	FILL	7.5YR5/8	GR S	20	
218-372	?	10YR5/2	SL	2	Probably fill; 3 cm organic lens N2.5 at 273 cm; stone at base
372-462	Cg	N3	SIL	-	Lacustrine; fine organics 372-384 cm, blades of marsh grass throughout
462-492	Oe	7.5YR3/2	-	-	Tidal marsh
492-562	C'g	10YR6/1	S	-	Fluvial/estuarine; 10YR5/2 at base, rootlets

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP5	Date: January 20, 2009	
Location: 47 m E of W boundary, 6 m S of corner of building J		
Lat.: N40º41.961'	Long.: W73º58.785'	
Parent material: Fill over lacustrine over tidal marsh		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 200 cm	
Notes: No recovery of saturated sediments below 382 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-200	FILL	Mixed 10YR3/3 10YR5/6 10YR4/6	GR SL	15	Coal
200-323	FILL	10YR5/2	SL	5	12 cm log at base of sediments, 10YR2/1
323-365	Cg	N3	SIL	0	Lacustrine; snail shell at 333 cm
365-382	Oe	7.5YR3/2	-	0	Tidal marsh

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP6	Date: January 21, 2009	
Location: 16 m SE of SE corner of Building J		
Lat.: N40º41.956’	Long.: W73º58.765’	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 105 cm	
Notes: Depths probably off due to recovery problems and saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-108	FILL	Mixed 10YR4/4 10YR5/6	GR SL	15	
108-261	FILL	Mixed 10YR5/3 10YR4/2	GR SL	15	Glass
261-425	Cg	N3	SIL	0	Lacustrine, marsh grass leaves
425-460	Oe	7.5YR3/3	-	0	Tidal marsh
460-500	C’g	2.5Y5/2	SL	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP7	Date: January 21, 2009	
Location: 4 m W of E boundary, 30 m S of N boundary		
Lat.: N40º41.962'	Long.: W73º58.750'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 285 cm	
Notes: Saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-167	FILL	Mixed 10YR3/3 10YR4/6	GR SL	25	Coal
167-312	FILL	Mixed 10YR2/2 10YR4/4	GR SL	15	Brick fragments, mucky lens 10YR2/1 293-312 cm
312-415	Cg	N3	SIL	0	Lacustrine, marsh grass leaves
415-463	Oe	7.5YR3/3	-	0	Tidal marsh
463-498	C'g	2.5Y5/2	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP8	Date: January 21, 2009	
Location: 3 m S of N boundary at inflection point in boundary		
Lat.: N40º41.972'	Long.: W73º58.756'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage:	Gr. Water:	
Notes: Saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-135	FILL	Mixed 10YR4/4 10YR5/6	GR SL	20	Brick at 80cm
135-183	FILL	Mixed N2.5	M GR SL	15	20 cm thick horizontal log at 163 cm, glass, mortar
183-158	FILL	Mixed 10YR4/3	GR SL	20	coal
258-307	Cg	N3	SIL	0	Lacustrine, marsh grass leaves
307-362	Oe	7.5YR3/3	-	0	Tidal marsh
362-386	C'g	2.5Y6/1	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP9	Date: January 21, 2009	
Location: 5 m E of W boundary, 55 m S of N boundary		
Lat.: N40º41.950'	Long.: W73º58.815'	
Parent material: Fill over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 175 cm	
Notes: Saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-148	FILL	Mixed 10YR2/2 10YR4/6 10YR5/8	VGR SL	40	Brick, sandstone, coal
148-308	FILL	10R4/3	GR S	20	Brick
308-400	Oe	7.5YR3/3	-	0	Tidal marsh
400-432	Cg1	2.5Y4/2	SIL	0	Fluvial/estuarine
432-451	Cg2	2.5Y5/2	SL	0	Fluvial/estuarine
451-473	C	10YR4/4	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY		Client: Panamerican Consultants, Inc.
Area: GP10		Date: January 21, 2009
Location: 5 m E of W boundary, 20 m S of GP9		
Lat.: 40º41.930'		Long.: W73º58.809'
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage:		Gr. Water: 105 cm
Notes: Problems with recovery, saturated sediments flowing into boring, depths likely off		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-104	FILL	Mixed 10YR4/5 N2.5 10YR4/3	GR SL	25	Concrete layer 31-38 cm possibly floor of woodshed
104-228	FILL	2.5Y4/4	LS	10	Brick
228-389	Cg	N3	SIL	0	Lacustrine, few blades of marsh grasses
389-395	Oe	7.5YR3/3	-	0	Tidal marsh
395-402	C'g	2.5Y6/2	SIL	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP11	Date: January 21, 2009	
Location: 8 m E of W boundary, 15 m N of end of woodshed		
Lat.: N40º41.932'	Long.: W73º58.813'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 130 cm	
Notes: Saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-97	FILL	Mixed N2.5 10YR4/6	VGR SL	50	Brick, coal, ash
97-130	FILL	10YR4/6	GR SL	15	
130-290	FILL	10Y4/4	SL	5	Macroorganics at base of fill layer
290-361	Cg	N3	SIL	0	Lacustrine
361-386	Oe	7.5YR3/3	-	0	Tidal marsh
386-412	C'g	2.5Y6/1	LS	0	Fluvial/estuarine
412-428	Cg1	10YR5/3	S	0	Fluvial/estuarine
428-445	Cg2	10YR4/4	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP12	Date: January 21, 2009	
Location: 30 m E of GP 9 on W edge of Park Ave.		
Lat.: N40º41.947'	Long.: W73º58.789'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 120 cm	
Notes: Problems with recovery, saturated sediments flowing into boring, depths possibly off		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-86	FILL	Mixed 10YR4/4 7.5YR5/6	GR SL	25	Blacktop and concrete of road to 35 cm
86-221	FILL	Mixed 10YR3/3 7.5YR4/6	GR SL	20	
221-388	Cg	N3	SIL	0	Lacustrine
388-410	Oe	7.5YR3/3	-	0	Tidal marsh
410-468	C'g	2.5Y5/2	S	0	Fluvial/estuarine, big piece of sandstone
468-495	C	10YR4/3	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP13	Date: January 22, 2009	
Location: 30 m E of GP12		
Lat.: N40º41.950'	Long.: W73º58.774'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 166 cm	
Notes: Problems with recovery, saturated sediments flowing into boring, depths probably off		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-149	FILL	Mixed 10YR3/3 N2.5 7.5YR4/6	GR SL	20	Brick, glass, coal, concrete
149-204	FILL	2.5Y4/3	SL	10	Brick, mixed 10YR2/2 at base
204-426	Cg	N3	SIL	0	Lacustrine, 10YR3/3 macroorganics upper 15 cm, few blades of marsh grass, shells
426-466	Oe	7.5YR3/3	-	0	Tidal marsh
466-480	Cg1	2.5Y6/1	LS	0	Fluvial/estuarine
480-502	Cg2	2.5Y5/2	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP14	Date: January 22, 2009	
Location: 22 m E of GP13		
Lat.: N40º41.952'	Long.: W73º58.761'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 116	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-136	FILL	Mixed N2.5 10YR3/3 10YR4/6	GR SL	25	Brick, coal, glass
136-254	FILL	10YR4/4	SL	5	Log N2.5 21 cm thick at contact with underlying silts
254-286	Cg	N3	SIL	0	Lacustrine
286-316	Oe	7.5YR3/3	-	0	Tidal marsh
316-336	C'g	2.5Y6/1	SIL	0	Fluvial/estuarine
336-378	C	2.5Y5/3	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP15	Date: January 22, 2009	
Location: 24 m E of GP14		
Lat.: N40º41.946'	Long.: W73º58.750'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 117 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-227	FILL	Mixed 10YR3/3 10YR4/6	GR SL	25	Brick
227-265	FILL	10YR3/3	SL	10	Brick
265-366	Cg	N3	SIL	0	Lacustrine, fine organic matter 10YR2/1 incorporated 265-271 cm
366-403	Oe	7.5YR3/3	-	0	Tidal marsh
403-430	C'g	2.5Y6/1	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP16	Date: January 22, 2009	
Location: 25 m E of GP15		
Lat.: 40º41.945’	Long.: W73º58.738’	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Moderately well	Gr. Water: 89 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-121	FILL	Mixed 10YR4/4 10YR2/1 7.5YR4/6	GR SL	20	Brick, coal
121-194	FILL	10YR4/4	GR SL	20	
194-356	Cg	N3	SIL	0	Lacustrine, fine organic matter 10YR3/1 incorporated 194-202 cm
356-366	Oe	7.5YR3/3	-	0	Tidal marsh
366-373	C’g	2.5Y6/1	SL	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP17	Date: January 22, 2009	
Location: 30 m E of GP11, 5 m NE of the corner of Park Ave. and Park St.		
Lat.: N40º41.936'	Long.: W73º58.790'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 148 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-168	FILL	Mixed 10YR2/1 10YR4/4 7.5YR4/6	GR SL	25	
168-307	FILL	2.5Y4/2	GR SL	15	
307-412	Cg	N3	SIL	0	Lacustrine, few shells blades of marsh grass
412-422	Oe	7.5YR3/3	-	0	Tidal marsh
422-437	C'g	2.5Y6/1	LS	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP18	Date: January 22, 2009	
Location: 20 m E of GP17, 10 m N of Park St.		
Lat.: N40º41.936'	Long.: W73º58.778'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 110 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-128	FILL	Mixed N2.5 10YR3/2 10YR4/6	GR SL	20	Brick, 1 piece historic ceramics at 128 cm
128-224	FILL	2.5Y5/2	SL	10	Log 128-145 cm
224-274	Cg	N3	SIL	0	Lacustrine, fine organics 10YR3/1 224-240 cm, few shells blades of marsh grass
274-289	Oe	7.5YR3/3	-	0	Tidal marsh
289-313	C'g	2.5Y5/2	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP19	Date: January 22, 2009	
Location: 45 m E of GP18		
Lat.: N40º41.934'	Long.: W73º58.747'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 153 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-105	FILL	Mixed 10YR3/3 10YR4/4 7.5YR4/6	GR SL	25	Brick
105-173	FILL	N2.5	VGR SL	50	Oily; brick, coal, ash
173-259	Cg	N3	SIL	0	Lacustrine, few blades of marsh grass
259-296	Oe	7.5YR3/3	-	0	Tidal marsh
296-320	Cg1	2.5Y6/1	SIL	0	Fluvial/estuarine
320-354	Cg2	2.5Y5/2	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP20	Date: January 23, 2009	
Location: 50 m E of GP19; SW corner of tennis courts, 15 m N of Park St.		
Lat.: N40º41.937	Long.: W73º58.712’	
Parent material: Fill over lacustrine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 124 cm	
Notes: Problems with recovery, saturated sediments flowing into boring; organic tidal marsh surface should be below lacustrine sediments below 300 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-185	FILL	Mixed N2.5 10YR3/3 2.5Y5/4	GR SL	25	Tennis court surface N2.5 gravels 0-8 cm; concrete pad 2.5Y5/2 8-16 cm; sand 10YR6/8 16-25 cm; brick, mortar, coal
185-219	FILL	10YR4/4	LS	5	
219-286	Cg	N3	SIL	0	Lacustrine, fine organic matter 10YR3/1 219-228 cm

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP21	Date: January 23, 2009	
Location: 20 m E of G20; SE corner of tennis courts		
Lat.: N40º41.934'	Long.: W73º58.969'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 122 cm	
Notes: Appears to be the same marsh surface as across the rest of the project area		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-252	FILL	Mixed N2.5 10YR2/1 10YR4/3 10YR4/6	GR SL	25	Tennis court to 25 cm; brick, coal, log 225-242 cm
252-451	Cg	N3	SIL	0	Lacustrine, fine organics 10YR3/1 252-279 cm, few blades of marsh grass, shells
451-462	Oe	7.5YR3/3	-	0	Tidal marsh
462-489	Cg1	2.5Y6/1	S	0	Fluvial/estuarine
489-516	Cg2	2.5Y4/2	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP22	Date: January 23, 2009	
Location: 20 m N of GP20; NW corner of tennis courts		
Lat.: N40º41.977'	Long.: W73º58.711'	
Parent material: Fill over lacustrine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 110 cm	
Notes: Did not reach marsh surface but should be here, deep (see GP21)		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-155	FILL	Mixed N2.5 10YR2/1 10YR5/6	GR SL	20	Tennis courts to 25 cm, brick, coal, ash
155-183	FILL	10YR4/4	LS	10	
183-429	Cg	N3	SIL	0	Lacustrine, fine organics 10YR2/1 183-194 cm, few blades of marsh grass, many shells

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP23	Date: January 23, 2009	
Location: 20 m N of GP21; NE corner of tennis courts		
Lat.: N40º41.946’	Long.: W73º58.700’	
Parent material: Fill over lacustrine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 133 cm	
Notes: Did not reach marsh surface, deep, see GP21		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-258	FILL	Mixed N2.5 10YR3/3 10YR4/4 10YR6/8	GR SL	25	Tennis courts to 27 cm, brick, coal, gravel lens190-205 cm
258-445	Cg	N3	SIL	0	Lacustrine, fine organics 10YR3/1 258-271 cm, few blades of marsh grass

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP24	Date: January 23, 2009	
Location: 15 m S of Park St.; in backyard of House 5, Building EFG		
Lat.: N40º41.923'	Long.: W73º58.707'	
Parent material: fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage:	Gr. Water:	
Notes: Saturated sediments flowing into boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-112	FILL	Mixed 10YR3/3 10YR4/6 7.5YR5/8	SL	5	Brick
112-232	FILL	Mixed N2.5 10YR4/4 7.5YR4/6	GR SL	20	Brick
232-372	Cg	N3	SIL	0	Lacustrine, blades of marsh grass
372-383	Oe	7.5YR3/3	-	0	Tidal marsh
383-390	C'g	2.5Y6/1	LS	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP25	Date: January 23, 2009	
Location: 15 m S of Park St.; E side of backyard of Building D		
Lat.: N40º41.937'	Long.: W73º58.719'	
Parent material: Fill over lacustrine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Moderately well	Gr. Water: 90 cm	
Notes: Problems with recovery, saturated sediments flowing into boring; did not reach organic marsh surface but likely there below 300 cm, see GP24 and GP26		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-156	FILL	Mixed 10YR3/3 10YR5/4 10YR4/6	SL	5	
156-268	Cg	N3	SIL	0	Lacustrine, blades of marsh grass

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP26	Date: January 23, 2009	
Location: 15 m S of Park St., 18 m W of GP25, W side of backyard of Building D		
Lat.: N40º41.934'	Long.: W73º58.730'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Somewhat poorly	Gr. Water: 35 cm	
Notes: Problems with recovery below 160 cm, saturated sediments flowing into boring, unable to reconstruct depths below 160 cm; lacustrine sediments, tidal marsh surface, and fluvial/estuarine sediments all present in boring		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-70	FILL	Mixed 10YR3/1 10YR4/6 7.5YR4/6	SL	10	
70-160	FILL	2.5Y4/1	LS	0	
?	Cg	N3	SIL	0	Lacustrine
?	Oe	7.5YR3/3	-	0	Tidal marsh
?	C'g	2.5Y6/1	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP27	Date: January 23, 2009	
Location: 2 m S of Park St., on sidewalk behind Building B		
Lat.: N40º41.929'	Long.: W73º58.743'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Moderately well	Gr. Water: 73 cm	
Notes:		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-112	FILL	Mixed 10YR3/3 7.5YR4/6 2.5Y4/2	GR SL	15	Sidewalk to 28 cm
112-147	FILL	2.5Y5/2	LS	0	
147-285	Cg	N3	SIL	0	Lacustrine, shells, blades of marsh grass
285-315	Oe	7.5YR3/3	-	0	Tidal marsh
315-3431	C'g	N5	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: G28	Date: January 26, 2009	
Location: 20 m N of Park St., center of tennis courts		
Lat.: N40º41.934'	Long.: W73º58.707'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 123 cm	
Notes: Thick lacustrine silts; stratified sands below 485 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-225	FILL	Mixed 10YR3/3 N2.5 2.5Y5/4	GR SL	25	Tennis court surface to 32 cm; texture mixed; brick, coal, ash
225-465	Cg	N3	SIL	0	Lacustrine, shells, blades of marsh grass
465-485	Oe	7.5YR3/3	-	0	Tidal marsh
485-495	Cg1	2.5Y6/1	S	0	Fluvial/estuarine
495-520	Cg2	2.5Y5/2	S	0	Fluvial/estuarine
520-531	Cg3	2.5Y5/1	VFS	0	Fluvial/estuarine
531-571	Cg4	2.5Y5/1	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY		Client: Panamerican Consultants, Inc.
Area: GP29		Date: January 26, 2009
Location: 35 m N of S boundary, between woodshed and Building K		
Lat.: N40º41.926’		Long.: W73º58.809’
Parent material:		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		Gr. Water: 132 cm
Notes: Saturated sediments flowing into boring, samples freezing to work table		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-265	FILL	Mixed N2.5 10YR3/3 7.5YR5/6	VGR SL	45	Concrete sidewalk 2-20 cm, concrete slab 55-65 cm, brick, coal
265-305	Cg	N3	SIL	0	Lacustrine
305-313	Oe	7.5YR3/3	-	0	Tidal marsh
313-319	C’g	2.5Y6/1	LS	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP30	Date: January 26, 2009	
Location: SW corner of project area, 10 m N of S boundary, 20 m E of W boundary, between woodshed and wall		
Lat.: N40º41.913'	Long.: W73º58.807'	
Parent material: Fill over lacustrine over tidal marsh over fluvial/estuarine		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 135 cm	
Notes: Problems with recovery, saturated sediments flowing into boring, depths likely off		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-228	FILL	Mixed 10YR3/3 10YR5/6 5YR4/6	GR SL	25	Brick, coal
228-239	Cg	N3	SIL	0	Lacustrine
239-261	Oe	7.5YR3/3	-	0	Tidal marsh
261-274	C'g	2.5Y6/1	S	0	Fluvial/estuarine

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP31	Date: January 26, 2009	
Location: 5 m N of NW corner of Building J, 10 m S of N boundary		
Lat.: N40º41.967'	Long.: W73º58.787'	
Parent material: Fill over lacustrine over tidal marsh		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well	Gr. Water: 142 cm	
Notes: No recovery below 354 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-146	FILL	Mixed N2.5 10YR3/3 7.5YR5/8	GR SL	20	Coal, brick
146-311	FILL	Mixed N2.5 10YR4/4 2.5Y5/2	SR SL	15	Lens coal and ash 146-166 cm
311-346	Cg	N3	SIL	0	Lacustrine
346-354	Oe	7.5YR3/3	-	0	Tidal marsh

Geoprobe Log		
Project: BNY	Client: Panamerican Consultants, Inc.	
Area: GP32	Date: January 26, 2009	
Location: 20 m W of GP18, 20 m E of GP19		
Lat.: N40º41.939'	Long.: W73º58.758'	
Parent material: Fill over lacustrine over tidal marsh		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage:	Gr. Water:	
Notes: Problems with recovery, saturated sediments flowing into boring, depths likely off, no recovery below 250 cm		

Depth (cm)	Horizon	Color	Texture	COF (%)	Notes
0-157	FILL	Mixed 10YR3/3 10YR5/1 7.5YR5/6	GR SL	20	Brick, coal
157-240	Cg	N3	SIL	0	Lacustrine, shells, blades of marsh grass
240-250	Oe	7.5YR3/3	-	0	Tidal marsh

Project: BNY		Client: Panam
Area: T1		Date: January 27, 2009
Location: At GP5; 5 m S of Building J		
Lat.: N40º41.961'		Long.: W73º58.785'
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 6 m long trench; historic fill throughout, brick and coal; variable color and textures; concrete slab 55-90 cm; asphalt 106-112 cm; ground water at 200 cm; excavated to 300 cm – did not reach lacustrine sediments or organic marsh surface *trenching attempts at GP1 and GP3 rejected on concrete slabs near surface		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
FILL	0-58	Mixed 10YR2/1 10YR3/3 10YR4/6 10YR6/8	-	-	GR SL		fr	as	25
FILL	58-90	CONCRETE SLAB							
FILL	90-106	Mixed 10YR4/6 10YR3/3	-	-	GR LS		vfr	as	15
FILL	106-128	Mixed N2.5 10YR4/6 7.5YR5/8	-	-	GR SL		fr	-	20

Project: BNY	Client: Panam	
Area: T2	Date: January 27, 2009	
Location: 5 m W of GP18		
Lat.: N40º41.936’	Long.: W73º58.779’	
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 6 m long trench; historic fill, brick, concrete, coal, concrete pillar in E end of trench 40-120 cm, 35 cm across; discontinuous lenses of fill pinch out; ground water at 167 cm		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
FILL	0-16	10YR3/3	-	-	SL		fr	cs	5
FILL	16-40	Mixed 10YR2/1 10YR3/3 10YR4/6	-	-	GR SL		fr	as	25
FILL	40-56	10YR3/3	-	-	SL		fr	as	5
FILL	56-74	7.5YR4/6 2.5Y5/4	-	-	SL VGRS		fr lo	cs as	10 50
FILL	74-85	10YR2/1	-	-	LS		vfr	as	5
FILL	85-127	7.5YR4/6	-	-	SL		fr	-	5

Project: BNY	Client: Panam	
Area: T3	Date: January 27, 2009	
Location: At GP28, center of tennis courts		
Lat.: N40º41.934'	Long.: W73º58.707'	
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 6 m long trench, historic fill, brick; variable color and textures; 0-10 cm blacktop, 10-22 cm concrete, 22-30 cm 10YR5/6 VGRS 40% COF; ground water at 149 cm		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
	0-30	TENNIS COURT SURFACE (see notes and GP20)							
FILL	30-57	2.5Y4/2	-	-	GR SL		fr	as	20
FILL	57-66	2.5Y5/4	-	-	GR LS		fr	as	15
FILL	66-80	Mixed 10YR3/3 N2.5	-	-	GR LS		vfr	as	15
FILL	80-123	2.5Y4/4	-	-	VGR LS		vfr	as	40
FILL	123-140	10YR3/3	-	-	S		lo	as	5
FILL	140-150	10YR4/4	-	-	GR LS		vfr	-	15

Project: BNY		Client: Panam
Area: T4		Date: January 28, 2009
Location: Between GP25 and GP26; backyard of Building D		
Lat.: N40º41.935'		Long.: W73º58.723'
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 6 m long trench; historic fill; below 83 cm discontinuous lens N2.5 EXGRS 65% COF; ground water at 115 cm		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
FILL	0-48	Mixed 10YR2/1 10YR3/3	-	-	SL		fr	as	10
FILL	48-83	10YR4/4	-	-	SL		fr	as	5
FILL	83-115	Mixed 10YR4/6 7.5YR5/8	-	-	GR SL		vfr	-	25

Project: BNY		Client: Panam
Area: T6		Date: January 29, 2009
Location: At GP8, 3 m S of N boundary at inflection point in boundary		
Lat.: N40º41.972’		Long.: W73º58.756’
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 6 m long trench; historic fill, brick, coal ,mortar, slag, ash; water table at 147 cm *located next to T5; T5 refused on 4 ft wide concrete slab at 50 cm, no description		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
FILL	0-48	Mixed 10YR3/3 10YR2/1	-	-	SL		fr	as	10
FILL	48-63	Mixed 7.5YR4/6 10YR3/3	-	-	GR SL		fr	as	15
FILL	63-74	10YR3/3	-	-	SL		fr	as	10
FILL	74-95	Mixed 10YR2/1 10YR4/6	-	-	SL		fr	as	0
FILL	95-122	Highly variable – ash, coal, mortar, brick, slag							
FILL	122-147	10YR5/6	-	-	VGR S		lo	-	50

Project: BNY		Client: Panam
Area: T7		Date: January 29, 2009
Location: Next to GP15		
Lat.: N40º41.941'		Long.: W73º58.755'
County: Kings	Map sheet:	Mapped as: Pavement & buildings, wet substratum-Laguardia-Ebbets complex
N. veg. (or crop):		
Parent material: Fill		
Landform/surface:		
Relief:	Slope:	Aspect:
Elevation:		
Drainage: Well		
Notes: 10 m long trench; historic fill, brick, coal, ash, slag, iron, leather, ceramics; ground water at 143 cm		

Horizon	Depth (cm)	Color	Redox.		Texture	Structure	Consist.	Bound.	COF (%)
			Concentrations	Depletions					
FILL	0-28	10YR3/3	-	-	GR LS		vfr	as	15
FILL	28-36	10YR4/2	-	-	VGR LS		vfr	as	40
FILL	36-40	2.5Y4/6	-	-	LS		vfr	as	0
FILL	40-47	10YR4/6	-	-	GR LS		vfr	as	25
FILL	47-60	N2.5	Coal, ash, and slag						
FILL	60-70	Mixed 10YR4/3 10YR4/6	-	-	GR S		lo	as	25
FILL	70-96	Mixed N2.5 10YR2/2	Coal, ash, and slag						
FILL	96-111	10YR3/2	c1d 7.5YR4/6	-	S		lo	as	10
FILL	111-143	Mixed 10YR2/2 10YR4/2 7.5YR4/6	-	-	GR S		lo	-	25

Appendix G
HEALTH AND SAFETY PLAN

SITE-SPECIFIC HEALTH AND SAFETY PLAN

PHASE IB ARCHAEOLOGICAL FIELD TESTING, ADMIRAL'S ROW SECTION OF FORMER BROOKLYN NAVY YARD
Brooklyn (Kings County), New York

Prepared for:

U.S. Army Corps of Engineers, New York District
Environmental Analysis Branch
Jacob K. Javits Federal Building
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New York, NY 10278-0090

and

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Under contract to:

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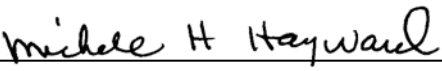
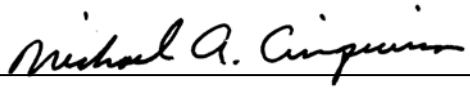
Contract No. W912DS-07-0005 (1st Option Year)

Peter J. Gorton, M.P.H.
Michele H Hayward, Ph.D, RPA

January 2009

Signatures	Name	Date
Peter J. Gorton, M.P.H. PEI Safety Officer		January 9, 2009
Michele H. Hayward, Ph.D. PCI Safety Manager		January 9, 2009
Michael A. Cinquino, Ph.D. Project Manager		January 9, 2009

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ATTACHMENTS

1.0 INTRODUCTION

1.1 PURPOSE

Panamerican Consultants, Inc. (Panamerican/PCI), under subcontract to Tetra-Tech of Portland, Maine and the U.S. Army Corps of Engineers, New York District (USACE), plans to conduct a Phase IB Cultural Resource Investigation for the Admiral's Row section of the former Brooklyn Navy Yard in the Borough of Brooklyn (Kings County), New York (Figure 1). Admiral's Row is located in the southwestern portion of the former Navy Yard along the north side of Flushing Avenue and encompasses 6.07 acres (Figure 2).

The Phase IA study, also undertaken by Panamerican (Hanley et al. 2008), involved the reconstruction of past last use in addition to the cultural and structural history of the project area; a review of extant structures with regard to their listing on the State and National Registers of Historic Places; an archaeological reconnaissance survey; an estimation of the potential for further historic and prehistoric resources, and recommendations for additional archaeological and architectural investigations. Only the archaeological activities are covered under this health and safety plan.

The potential for buried prehistoric and pre-Revolutionary War historic cultural remains is considered low largely due to the presence of tidal salt marshes and meadows, as well as open water that originally covered the entire project area. Increasing exploitation, occupation and eventual in-filling of the area raises the probability of locating later historic artifacts and features to moderate and high, particularly in the yards surrounding the Admiral's Row residences (Hanley et al. 2008:11-1/11-3).

The Phase IA study's projected and subsequently adopted testing strategy for possible subsurface cultural remains also incorporated a geomorphologic component. Backhoe trenching or hydraulically powered auger borings will be used to identify the original shoreline, determine the depth of fill (indicated as a result of the background review), and to detect readily apparent (no formal laboratory or field investigation) hazardous conditions or materials. Close (7.5-m [25-ft] or less) to standard (15-m [50-ft]) interval shovel testing is also planned for the Parade Ground, the area north of the present Timber Shed, and the yards of the Admiral's Row residences. Although specific locations for the auger borings and backhoe trenches were selected in the Phase IA study (Figure 3), adjustments might be necessary. The presence of hazardous materials, the depth and nature of fill and the results of the geomorphologic testing are among the factors that may influence the number and placement of the units (Hanley et al. 2008:11-2/11-5).

A further recommendation of the Phase IA study concerned the development of a formal Health and Safety Plan. Known hazards identified during the initial reconnaissance included: dilapidated structures, buried utilities, the presence of PCBs around Building 198, poison ivy, discarded hypodermic needles (left from trespassers), and other possibly harmful materials in rubble-filled areas. Mechanical and hand excavation of units will also involve a different set of safety issues (Hanley et al. 2008:11-5), all of which are addressed in Section 2.

The following Health and Safety Plan (HASP) is directed at protecting the health and safety of the archaeological field crew during the Phase IB survey. All work performed at the Admiral's Row section of the former Brooklyn Navy Yard falls under the authority of this site-specific HASP.

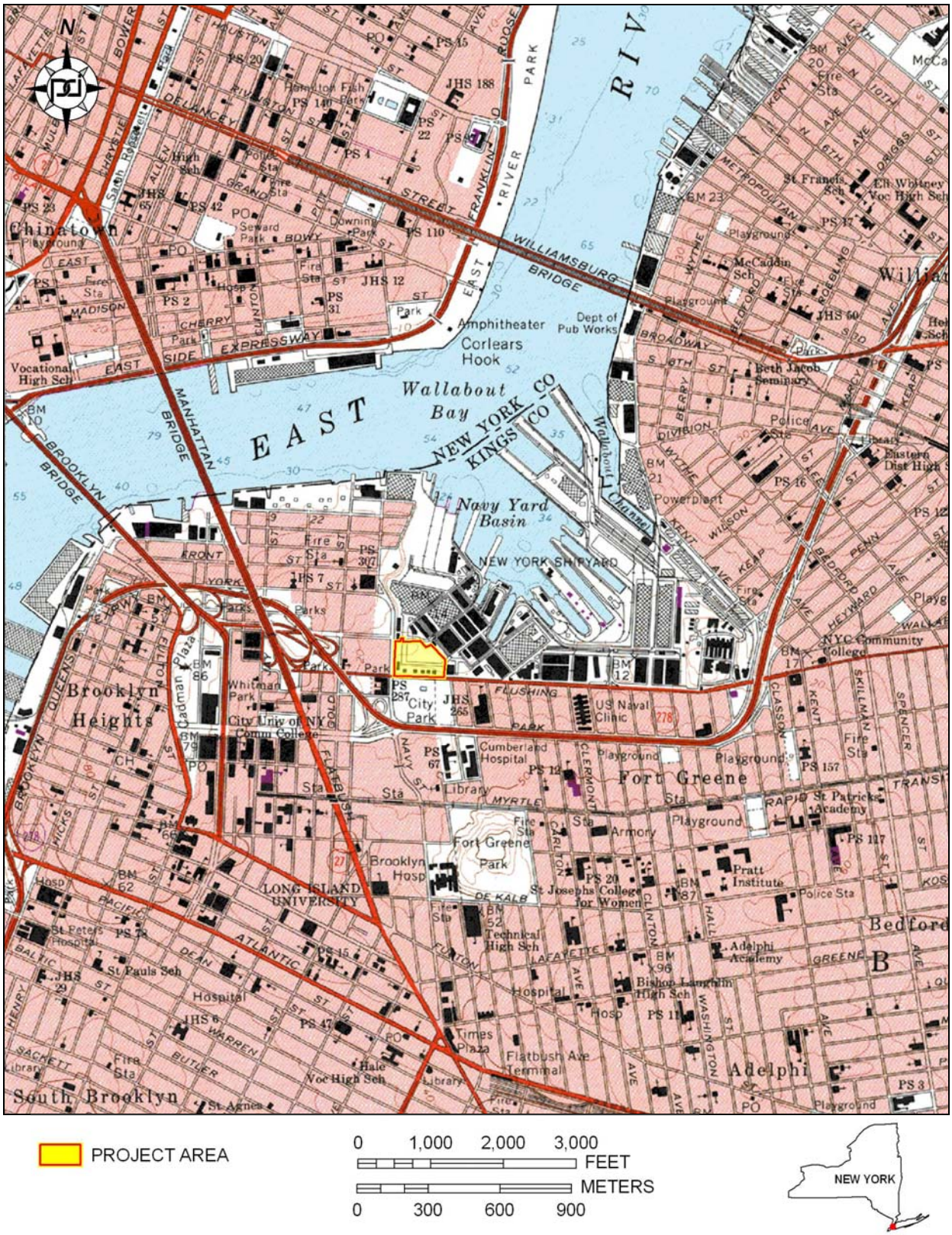


Figure 1. The Admiral's Row project area within the former Brooklyn Navy Yard, Kings County, New York *(USGS Brooklyn, NY 1980).*

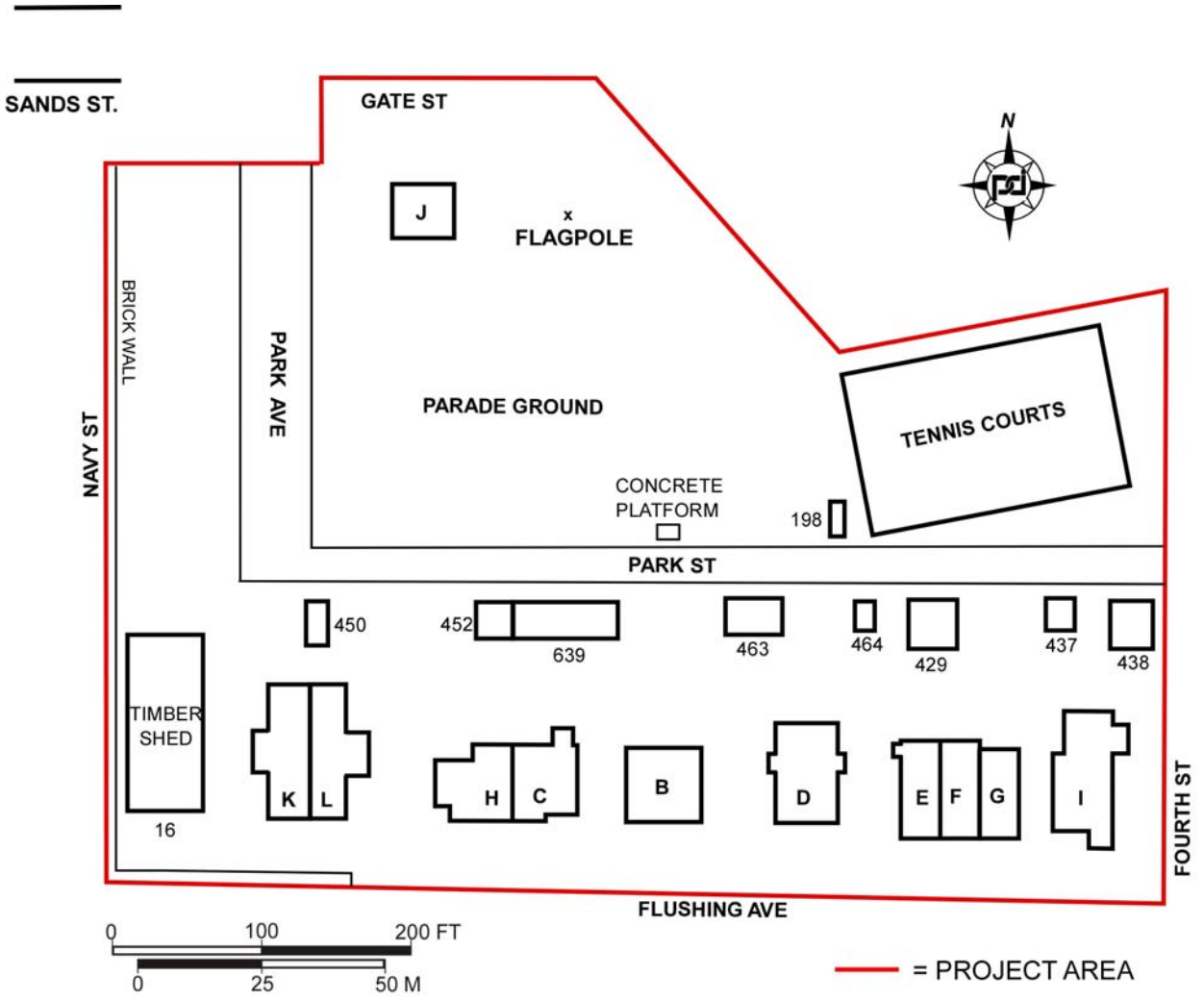


Figure 2. The Admiral's Row project area showing locations of buildings, structures and roads. Brooklyn Navy Yard, Kings County, New York.

The plan has been designed to follow all applicable Federal, State, and Local regulations. Specifically, it incorporates the Occupational Safety and Health Administration (OSHA) 1910 and 1926 pertinent regulations; New York State Industrial Code Rule 23 relevant sections; U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual applicable portions, in addition to Panamerican's experience in safety plan development and implementation. The purpose of this HASP is to establish personnel protection standards, mandatory safety practices and procedures for this task-specific effort. This plan assigns responsibilities, delineates standard operating procedures, and provides for contingencies that may arise during the cultural resources field investigations.

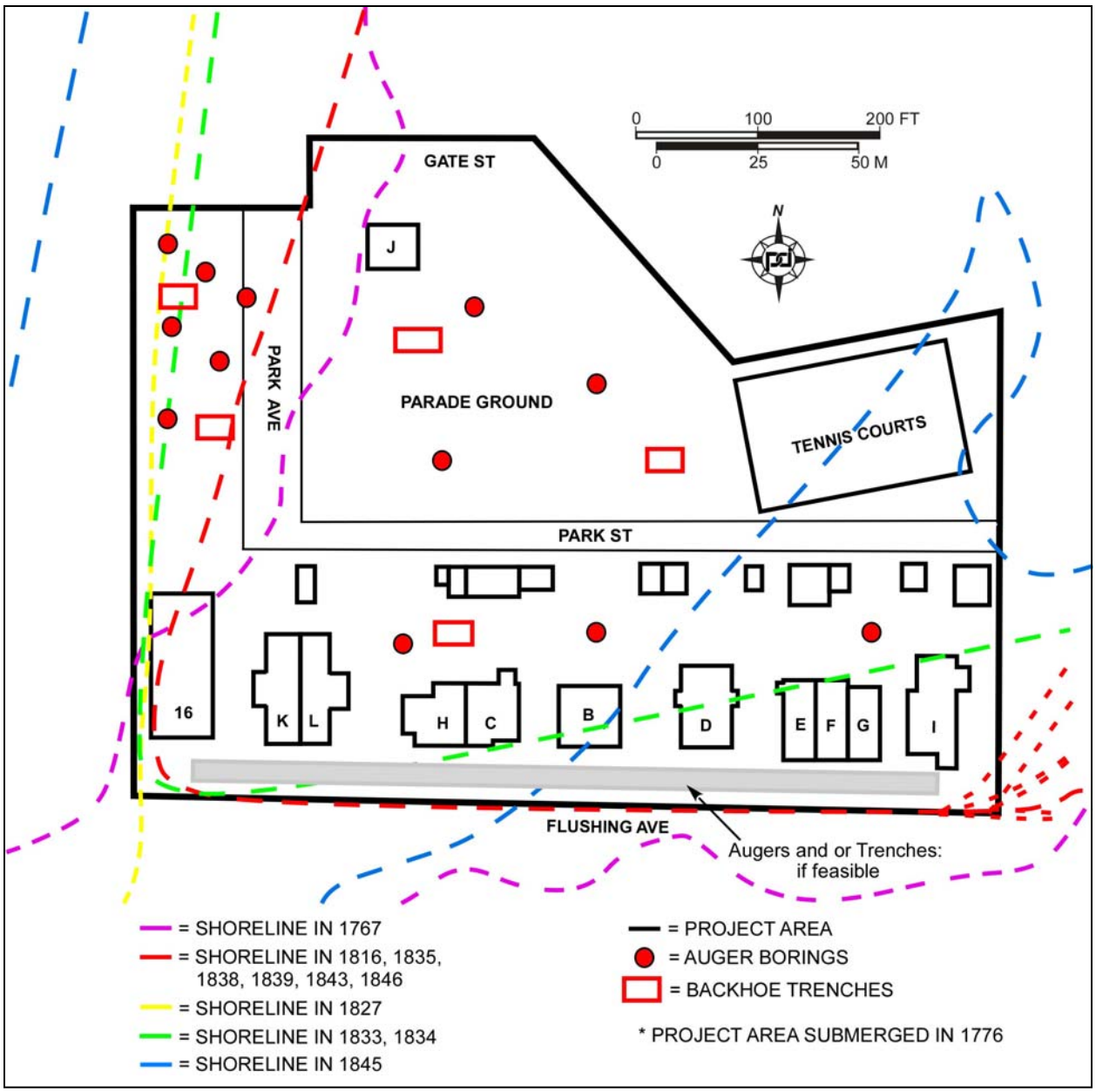


Figure 3. Suggested Phase IB geomorphological survey locations relative to historic map-documented shoreline locations at the Admiral's Row project area. Brooklyn Navy Yard, Kings County, New York. *(Note: all shorelines are approximate due to the unreliable depiction of scale, location and proportions on some historic maps.)*

1.2 APPLICABILITY

All personnel involved in the Phase IB survey must be familiar with this plan and comply with its requirements; these personnel must sign off on the Plan Acceptance Form found in Attachment 3, which will be retained by Panamerican in the project file. Attachment 3 also contains a statement of compliance form, a site safety briefing form, and an accident/exposure form. The field crew will review the HASP before beginning the survey. The review signals the crew's willingness to comply with the minimum requirements of the site-specific plan, sign the Statement of Compliance, and be a responsible partner with Panamerican to ensure a safe working environment during the project.

The plan is based on available information concerning hazards that exist, or may exist, at the project site during a Phase IB survey. If more data concerning specific hazards become available, the plan will be modified accordingly. Initially, the Site Safety Officer is expected to recommend and implement any modifications, normally coordinated with, or approved by Panamerican and the USACE Safety Officers or Managers. Documentation of the changes and the decision-making process will form a permanent part of the HASP and project files.

1.3 FIELD ACTIVITIES

One Geomorphologist, one Field Director and four field technicians will carry out the Phase IB examination during January 2009. The Geomorphologist and Archaeologist will oversee the excavation of an estimated 10 trenches and 12 borings with a backhoe and a mechanically powered auger, respectively, to locate and define archaeological remains. This will be complemented by placement of approximately 50 shovel tests. The Field Director will supervise this phase of the survey in conjunction with the Geomorphologist. Initial locations for the trenches and shovel tests were designated as part of the recommendations of the Phase IA report (Hanley et al. 2008:11-2/11-5) (see Figure 3).

Both the geomorphological and archaeological trenches are likely to vary in length and depth up to several meters depending on such factors as the thickness of the upper surface fill, integrity of the side walls, and nature of the subsurface cultural and natural stratigraphy. Trench widths are anticipated to follow the breadth of the backhoe bucket, approximately 1 m (3 ft). Excavation normally proceeds with the successive removal of soil horizons across the entire trench, along with the documentation of stratigraphic characteristics and any cultural remains or features. As appropriate, a sample of trench soils will be screened through hardwire mesh screens for artifacts. Upon completion of the recording effort via photographs, notes and measurements, the trenches will be backfilled to the original contours or surface conditions.

The shovel tests are excavated and documented in a similar manner. The tests are about 40 centimeters in diameter and dug to culturally sterile soil unless encountering impasses such as water or dense rocks. Shovel test soils are also screened through hardwire mesh and the units inspected for the presence of features (post holes, hearths). The different soil layers are noted and after documentation, the tests are backfilled to original slope conditions. Mapping of the trenches, shovel tests and other appropriate cultural and physical features via GPS techniques and compass/tape is undertaken, as well as photographic documentation of general site conditions, field methods and field results.

1.4 PERSONNEL REQUIREMENTS

Key personnel are as follows:

Project Manager:	Dr. Michael A. Cinquino
Geomorphologist:	Dr. John Wah
Field Director	Dr. Donald Smith
Site Safety Officer:	Dr. Donald Smith
PEI Safety Officer:	Mr. Peter J. Gorton
PCI Safety Manager:	Dr. Michele H. Hayward

Site personnel and their duties are outlined below:

1) Field Director
The Field Director (Panamerican Consultants, Inc.) will be responsible for all Panamerican personnel on-site and may designate specific safety duties to other field crew members. The Field Director has the primary responsibility for:

- Assuring that personnel are aware of the provisions of this plan and are instructed in the work practices necessary to ensure safety in planned procedures and for dealing with emergencies;
- Verifying that the provisions of this plan are implemented;
- Assuring that all field personnel have the required training;
- Assuring that appropriate personnel protective equipment (PPE), if necessary, is available for and properly utilized by all personnel;
- Assuring that personnel are aware of the potential hazards associated with site operations;
- Maintaining sign-off forms and safety briefing forms.

2) Site Safety Officer (SSO)
For the Admiral's Row location the Site Safety Officer is the same as the Field Director and in addition shall:

- Verify and post the locations of medical facilities, emergency telephone numbers and routes;
- Make available the OSHA poster on site;
- Monitor field personnel and potential for exposure to physical hazards such as heat/cold stress, safety rules near heavy equipment and excavations;
- Halt site operations if unsafe conditions occur or if work is not being performed in compliance with this plan;
- Develop, discuss and implement changes to the plan with Panamerican and USACE Safety Officers and Managers if field conditions warrant;
- Identify any special medical conditions or restrictions of personnel prior to field work;
- Monitor performance of all personnel to ensure that the required safety procedures are followed. If established safety rules and practices are violated, a report of the incident will be filed and sent to the Panamerican Project Manager within 48 hours of the incident;
- Conduct daily safety meetings as necessary and complete the Site Safety Briefing Form prior to initiation of field activities and as necessary (Attachment 3).

3) Archaeological Field Personnel (Panamerican Consultants, Inc.)
It shall remain the responsibility of each field crew member to follow the safe work practices listed in Section 3 of this HASP and in general to:

- Be aware of the procedures outlined in this plan;
- Take reasonable precautions to prevent injury to himself and to his coworkers;
- Perform only those tasks that he believes can be done safely and immediately report any accidents or unsafe conditions to the SSO/Field Director;
- Notify the SSO/Field Director of any special medical problems (i.e., allergies or medical restrictions) and make certain that on-site personnel are aware of any such problems;
- Think Safety First, prior to and while conducting field work;
- Not to eat, drink or smoke in work areas;
- Not to have firearms, alcohol or illegal drugs on site, in company vehicles, or in transit to the site;
- Not to fight or engage in rough play;
- Respect all public and private property.

The Panamerican crew can request assistance from the SSO/Field Director at any time during fieldwork. Each crew member has the authority to halt work should he or she deem conditions to be unsafe. Visitors will be required to report to the Field Director/SSO and follow the requirements of this plan.

2.0 SITE DESCRIPTION AND HAZARDS

2.1 BRIEF SITE BACKGROUND AND DESCRIPTION

The project area lies within an urban setting (Figure 4), whose access is officially restricted. Although surrounded by streets and fences, unauthorized entry into the area does occur. Admiral's Row contains the following structures and features (see Figures 2 and 3): 1) a series of 10 residences (Figure 5), along with associated outbuildings and yards bordering Flushing Avenue and Fourth Street (Figure 6); 2) a long rectangular brick and wood frame Timber Shed (Figure 7) with an adjacent open lot fronting Navy Street; the former mid-nineteenth century Parade Ground of the Navy Yard in the northern half of the project area with a concrete platform, flag pole, Building J, tennis courts (Building 710) and related wood frame shower room or Building 198 (converted to an electrical substation), in addition to a modern monitoring well; and 4) portions of Park Avenue and Park Street centrally located within the project area that are asphalt paved but in poor condition with numerous gravel patches and a sinkhole (Hanley et al. 2008:4-1, 4-8).

The residences are in varying states of structural integrity (compare Figure 4 with Figure 8) and open to thinly scattered brush and trees characterize the surrounding yards (Figure 9). The lot north of the Timber Shed includes saplings, ivy, grass and weeds (Figure 10). The Parade Ground comprises an open lot with scattered small trees and some brush (Figure 11). Modern garbage, debris and rubble can be found throughout the project area (Figure 12) (Hanley et al. 2008:4-1, 4-8). None of these residences, buildings, features or open sections have been occupied or in use for more than twenty years (Quay Consulting 2006:2).

Figure 4. Navy Street and Timber Shed, facing north from Flushing Avenue. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 5. Quarters B, facing northeast. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 6. Building 463, dilapidated garage associated with Quarters B, located on northeast corner of lot, facing southeast. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 7. West elevation of Timber Shed, facing northeast. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 8. Quarters B, detail of rear elevation, facing southwest. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 9. View of a yard behind and between Buildings L and H, facing south-southeast. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 10. Sparse vegetation and scattered trash across the open lot north of the Timber Shed, facing south. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 11. Saplings growing across the former Parade Ground, facing south. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Figure 12. Garbage and debris in the open lot north of the Timber Shed, facing northeast. Brooklyn Navy Yard, Kings County, New York *(PCI 2008)*.

Mapped soils in the project area reflect the natural and cultural processes that have formed the site. The recently completed New York City Reconnaissance Soil Survey (New York City Soil Survey Staff 2005) identifies soils in the project area as:

Pavement & buildings, wet substratum-Laguardia-Ebbets complex, 0 to 8 percent slopes: Nearly level to gently sloping urbanized areas filled with a mixture of natural soil materials and construction debris over swamp, tidal marsh, or water; a mixture of anthropogenic soils which vary in coarse fragment content, with 50 to 80 percent of the surface covered by impervious pavement and buildings.

Both the Ebbets Series and Laguardia Series are described as greater than 40 inches (101 cm) of fill with construction debris. A typical Ebbets Series soil has from 10 to 34 percent coarse fragments while Laguardia has from 35 to 75 percent coarse fragments. Both series are described as having a cambic (Bw) horizon formed in the fill. Recent test borings performed within the Navy Yard found nineteenth century and twentieth century fill extending to a depth of no less than 7.5 feet (2.3 m) in one area and greater than 12 feet (3.6 m) in another. Neither buried organic soils nor thick, dark surface horizons typical of tidal marshes and soils formed in saturated, anaerobic settings were described in any of the borings (Geismar and Oberon 1995, 1996).

2.2 HAZARD EVALUATION

Based on the nature and location of the geomorphological and archaeological activities including the known presence of PCBs and poison ivy, in addition to mechanical and hand excavations of trenches and shovel tests, the overall hazard potential is considered moderate to high. Both general and specific chemical, physical and biological concerns can be identified and are addressed in the following Section 2.2 subheadings.

2.2.1 Chemical Hazards. Quay Consulting, LLC, conducted a Phase II Environmental Site Investigation to evaluate soil and water quality at the Admiral's Row location in 2006. Ten soil borings (SS-01 through SS-10), four ground water samples (MW-01 through MW-04) and 12 wipe samples around the former shower room/transformer substation (Building 198) were obtained for analysis. In response to comments on their initial study, Quay Consulting tested additional soil (SP-01, SP-02, SS-03, SS-07A,B,C, SS-09A,B) and water samples (MW-10) the following year. Their locations relative to the proposed Phase IB geomorphological and archaeological field work are designated as environmental sampling points on Figure 13.

Testing results included the following observations.

- Metals and semivolatile compounds (SVOC) were present in higher concentrations in the upper soil layers (0 to 2 ft) than deeper horizons to 12 ft below the surface. The surface strata represent fill materials such as bricks and asphalt or top/sandy soils (consistent with the foregoing soil survey description), while the deeper layers consist of cleaner, naturally derived sands. A few specific metals and polyaromatic hydrocarbons (PAHs), a subset of SVOC, occur in the fill layers above established limits, but in nearly all cases within acceptable background levels (e.g., metals = copper, iron, mercury, PAHs-phenanthrene, chrysene). No volatile organic compounds (VOC), SVOC, pesticides and herbicides exceeded established limits.
- No hazardous wastes were identified within the project area, except for elevated polychlorinated biphenyls (PCBs; specifically PCB Aroclor 1260) in one soil sample: SS-09. Soil sample SS-08 also contained PCB Aroclor 1260, but below the accepted standard. The additional samples around sample point SS-09 (SS-09A,B and MW-10) lacked the compound, while soil sample SP-01 in front of the timber shed possessed a concentration below the standard.
- Metals (antimony, iron, lead, manganese, mercury) and sodium concentrations were above acceptable limits in the groundwater samples. The groundwater is not potable.
- No VOC, SVOC or pesticide elements in the groundwater were found above acceptable limits.
- Half of the wipe samples from around the base of two oil type transformers had higher than acceptable concentrations of PCBs; the other half possessed concentrations below the established limit; one of the transformers, identified as Transformer Code 87, is highly corroded and is the likely source for the surrounding and nearby (SS-08 and SS-09) soil contamination.
- Groundwater depth varied from 3 to 7 feet below ground surface.
- No reported existing or historic aboveground or underground storage tanks.
- Waste oil drums and waste stock piles were noted in the project area.

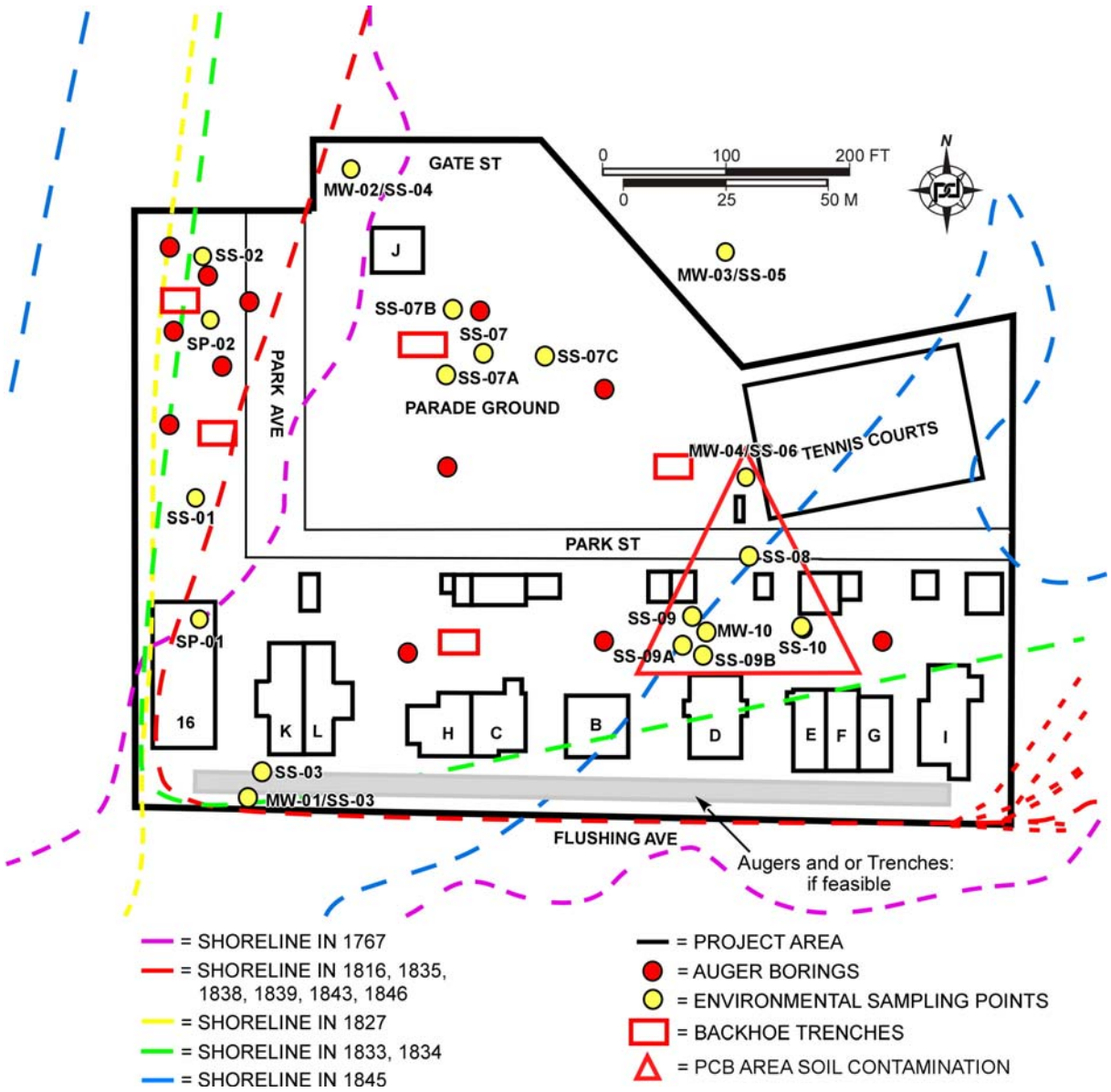


Figure 13. Boring locations and sampling points relative to the proposed Phase IB geomorphological and archaeological field work *(source data: Quay Consulting 2006, 2007).*

The authors of the two Quay Consulting reports (2006, 2007) concluded that the soil and ground water quality generally reflects the immediate past use of Admiral's Row as urban (industrial, residential) with characteristically low-level contaminates derived from on-site fill layers. They considered that these elements posed only a slight risk to health because of their low concentrations and relative immobility. The one exception concerns the higher-than-acceptable PCB limits in and around the shower room/transformer station.

Polychlorinated biphenyls or PCBs are mixtures of some 209 separate chlorinated compounds that are either oily liquids or solids that are colorless to light yellow. They have no odor and cannot be tasted. PCBs have been used as coolants and lubricants in transformers, as is the

case for the present project area, and electrical equipment since they are good insulators and flame retardant. Their manufacture was stopped in 1977 because the compounds are harmful to humans and animals causing such conditions as liver damage and skin rashes (Agency for Toxic Substances 2001).

The potential routes of exposure during this project include:

- Skin contact with contaminated soil or artifacts
- Inhalation of vapors
- Ingestion from dust/particles on food and drink
- Entry of contaminants through cuts, abrasions or punctures.

The area of PCB contamination in the Admiral's Row section is restricted and based on the available data has been outlined on Figure 13. A Fact Sheet concerning the nature and risk assessment of PCBs is presented in Appendix A. The prime response to this hazard and the other identified chemical hazards will be avoidance. The planned excavations at present are not within the PCB-containing area and can even be relocated farther, if necessary. Additional measures include:

- A minimum of Level D personnel protective clothing for work including long pants and shirts, hats, gloves and dust masks.
- Personal hygiene practices, such as no eating, drinking or smoking in the field.
- If dusty conditions occur that may be hazardous to the crew, the situation will be assessed to determine the appropriate course of action. Excavated soil can be dampened to mitigate dust.
- Minimum handling of artifacts while in the field.
- Thorough washing of face and hands with soap prior to leaving the site or before eating, drinking or smoking.

If excavation within the PCB-contaminated area becomes necessary, then a formal plan to address this hazard would need to be drafted and the crew hazardous-waste trained.

2.2.2 Physical Hazards. Possible and actual physical hazards connected with the Phase IB investigation are varied.

- Noise
- Heat/Cold stress
- Fire and Exposition
- Shovel testing/hand screening
- Backhoe testing
- Slips, trips, and falls
- On-site safety
- Motor vehicle safety
- Severe weather
- Remote site safety
- Building safety
- Utility Lines

2.2.2.1 Noise. All field crew shall wear hearing protection devices, such as ear muffs or ear plugs, if site conditions warrant. These conditions would include difficulty hearing while speaking to one another at a normal tone within three feet (~1 meter). Current noise levels involve adjacent road traffic, but levels may rise during operation of the backhoe or hydraulic auger. However, if normal speech is interfered with due to site noise, the Field Director/SSO will initiate the mandatory use of hearing protection around such noise producing equipment or events.

2.2.2.2 Heat/Cold Stress. Heat stress work modification may be necessary during ambient temperatures of greater than 29^{o} Centigrade (85^{o} Fahrenheit) while wearing normal clothing or exceeding 21^{o} C (70^{o} F) while wearing personnel protective clothing. Given that the field work will occur during January, the opposite problem of cold stress is likely.

Wet clothes combined with cold temperatures can lead to hypothermia. If air temperature is less than 40^{o} F (4^{o} C) and an employee perspires, the employee must change into dry clothes. The following summary of the signs and symptoms of cold stress are provided as a guide for field and safety personnel.

Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.

Chilblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms accompanied by pain.

Second-degree frostbite is manifested by skin with a white, waxy appearance and the skin is firm to the touch. Individuals with this condition are generally not aware of its seriousness because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.

Third-degree frostbite will appear as blue blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.

Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:

- Involuntary shivering
- Irrational behavior
- Slurred speech
- Sluggishness

Preventive measures will include:

- Use of several layers of clothing. Insulated all-weather boots, overalls.
- Keeping physically active.
- Rest periods in a heated indoor facility or the company van

2.2.2.3 Fire and Explosion. This hazard will be minimal for activities associated with the project. A fire extinguisher is part of the project vehicle's equipment

2.2.2.4 Shovel Testing/Hand Screening. This activity will involve the use of shovels, trowels, tape measures, screens made from 3" wire mesh, machetes, and other hand tools, as well as the use of toxic plant protection. The shovel testing and hand-held or hand-powered screening will be conducted in open vegetation areas and around, but not in any extant structures. Common health and safety issues involve: bruises, minor lacerations, excessive dust and eye irritation.

Hand tools are non-powered devices that include anything from axes to wrenches to machetes. The greatest hazards posed by hand tools result from irresponsible use, misuse, improper maintenance, and the lack of common sense. The field crew and Panamerican supervisors are responsible for the proper use and maintenance of tools. Precautions for the foregoing potential hazards include:

- Machetes, knives, saw blades, and other sharp tools should be directed away from other workers.
- Safety goggles, gloves, boots, and other appropriate protective equipment should be warn as appropriate.
- Work areas, when possible, should be kept clean and dry to prevent accidental trips, slips, falls, and electrical hazards.
- Exercise caution and be aware of surrounding terrain and presence of other crew members when setting up the shovel test grid and excavating the shovel tests
- Dampen or wet soils in the case of excessive dust
- Around flammable substances, avoid sparks produced by iron and steel hand tools as they can be a dangerous source of ignition.

2.2.2.5 Backhoe Testing. The Phase IB field testing strategy will also employ a backhoe, hydraulic auger or both to excavate trenches that may reach several feet below the surface to encounter natural or undisturbed cultural horizons. A number of Occupational, Safety and Health Administration (OSHA) requirements, in addition to New York State Department of Labor stipulations cover trenching procedures and related activities (OSHA Section 29 CFR Subpart P 1926:650-652 and 1910; New York State: Industrial Code Rule No. 2, Parts 23 1-4).

The prime concern of the actual excavation is the danger of wall collapse due to various factors including the nature of the soils, presence of water, or depth of the excavation. To avoid or mitigate against cave-ins, Federal and State regulations require some form of protective measure at specified depths. Normally these measures are not needed for excavations less than five feet deep and with little danger of wall collapse. Units and trench excavations that go deeper than five feet are required to have protective measures and those deeper than 20 feet must have the measures designed by a registered engineer.

Protective measures range from stepped or angled side walls, to timber or aluminum shoring and individual trench boxes. The most likely measure to be adapted for this project is stepped or angled side walls. Enough space between the planned tranches is planned, with this method providing maximum visibility of the side walls for documentation. If entry into the trenches is not necessary, then excavation can proceed beyond the five-foot limit without steeping, shoring or use of trench box.

Additional protective measures include:

- Entry into the units should be minimized; document from outside the unit wherever possible.
- Protective equipment or clothing may be required, such as hard hats, safety glasses, heavy or steel-toed boots.
- Inspection of the site for safety concerns should be on a regular basis, daily if necessary.
- Placement of backdirt pile at least 2 feet and preferably more from the edge of the trench.

A related safety issue is the use of backhoe or auger that possesses a risk to the archaeologist of being hit or injured from the heavy machinery. Safe practices to be followed include:

- Staying in sight of the operator at all times.
- Use of hard hats and other protective equipment or clothing such as safety glasses and steel-toed boots.
- Development of a signaling system.
- Staying clear of the heavy equipment, especially around the back.

2.2.2.6 Slips, Trips, and Falls. Slips, trips and falls are a common hazard around any archaeological investigation, and especially so at the Admiral's Row location. Trenches will be open, large holes are present and piles of debris can be found throughout. Preventative measures include:

- Keep surrounding surfaces clear of items or conditions that can increase the possibility of these hazards.
- Keep tools in their proper location and positions.
- Be aware of your surroundings.

2.2.2.7 On-Site Safety. Although entry into the project area is restricted, people can and have entered the project area. For their protection, as well as the field crew's, signs or barriers may be necessary. This is especially the case if trenches need to be left open at the end of the day. A heavy covering such as plywood over the open units surrounded by orange web fencing and caution tape are among acceptable measures. Equipment not taken from the field should be stored to prevent theft and injury. The heavy machinery should be in proper safe position. Entry points into the project area should be locked and secured. These or any other safety measures should be documented via field notes, photographs or both.

2.2.2.8 Motor Vehicle Safety. Traffic and motor vehicle safety refer to two distinct areas of driving safety and safety associated with working near or alongside motor vehicles.

The following motor vehicle safety procedures are to be followed by all field personnel.

- Personnel shall not mount or dismount moving vehicles.
- Personnel will not ride in the bed of any vehicle.
- Seatbelt use is mandatory.

- Drinking water is recommended to be carried on all vehicles in amounts of at least 1 gallon per person per day.
- Equipment that should be carried on all vehicles includes a fire extinguisher, a first aid kit, flares, and a shovel.
- Frequent checks of the gasoline, oil, and water temperature gauges of the vehicle.
- Tires must be kept at normal inflation pressure to avoid blowouts.
- Stay with the vehicle if it breaks down and wait for help to arrive. Do not attempt to walk to get help.

2.2.2.9 Severe Weather. In the event of severe weather including high winds, thunderstorms and lightening, work will be stopped until the episodes pass.

2.2.2.10 Remote Site Safety. Although the project area is within an urban landscape, provisions need to be made for any accidents that would require immediate medical attention or evacuation from the field. An emergency communication procedure is outlined below that will be followed in the event of such conditions. The crew will have/use cellular phones.

2.2.2.11 Building Safety. Hazards or safety issues involved with testing around historic buildings include: lack of structural integrity, falls, puncture wounds (physical); presence of uncontained hazardous substances, pealing lead-based paints (chemical), and the presence of rats and other animal droppings (biological). No excavations within the Admiral's Row structures are planned. Trench or shovel testing will occur near the buildings, but far enough away to avoid the dangers of the unsound structures and any potentially interior hazardous chemical or biological situations.

2.2.2.12 Utility Lines. Underground utilities within the project area include sewer, water, electricity and steam. The latter two are produced by the nearby Brooklyn Navy Yard Cogeneration facility that formerly supplied the residences; no service is currently maintained. Transformers, as discussed above, are located in the shower room/Building 198 that is a source of PCB contamination. Another source of contamination comes from the electrical subsurface cables that have been reported to contain PCBs. The lines in the manholes that service each of the buildings may contain asbestos materials, in the form of cement, to protect from electrical arching and grounding (Quay Consulting 2006b:12).

New York State's Industrial Code 53, also designated as Part 753, requires, among other stipulations, that the Call Before You Dig Message Center be notified at least two working days, but not more than 10 working days before any excavation or drilling. The Center will be called and arrangements made for the marking of the utility lines, so that they can be avoided.

***2.2.2.13 Unexploded Ordinance*.** Existing records and available information reveals no munitions or explosives on site. The project area's historic use for light industry, residences, and recreation further reduce the probability of unexploded ordnance (Quay Consulting 2006b:17).

2.2.3 Biological Hazards. Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak, or poison sumac results in skin rash.

Ticks are a vector for a number of serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens.

2.2.3.1 Poison Ivy. Survey personnel will be familiarized with the recognition of the poison ivy plant, which is already known to occur at the site. The crew should avoid walking through areas of heavy growth. If areas of poison ivy must be entered, extremities will be kept covered and contact of bare skin with poison ivy leaves and stems should be avoided. When digging in areas of poison ivy growth, avoid contact with the roots, since these can also produce a reaction.

2.2.3.2 Ticks and Lyme Disease. Ticks are common during the spring and summer and are not anticipated to be a problem during the present investigation. Information on ticks and disease is nonetheless presented due to its prevalence. Two types of ticks may be encountered: the dog tick and the deer tick.

The dog tick is the larger, more common tick. After biting, the dog tick will remain attached until engorged with blood. Usually, dog ticks can be found by careful inspection of the body at the end of the work day. If the tick is already embedded in the skin, remove it with tweezers or fingers by grasping the tick as close to the skin as possible and pulling downward. Check to make sure all tick parts have been removed from the skin. Wash the area of the bite with soap and water. Seek medical attention if any tick parts remain in the skin. Dog ticks may transmit rocky mountain spotted fever and other diseases.

The deer tick is much smaller, ranging from poppy-seed to grape-seed size, and does not remain attached to the skin very long after biting. You may be bitten by a deer tick and never see the tick. Deer ticks can transmit lyme disease, which can have serious, long-term health effects if untreated. If a small tick is discovered embedded in the skin, remove it as above. Check the area of the bite periodically. If a rash or flu-like symptoms develops, medical attention must be sought. Lyme disease is characterized by a bulls-eye type rash; light in the center with an outer red area. Flu-like symptoms may occur as well. These signs may occur at different times and the rash may not appear. If any bites on the skin are discovered, the affected area should be washed and medical attention sought, if a rash or flu-like symptoms appear.

The following steps will be taken to limit the likelihood of tick bites:

- Tape pants to safety boots;
- Wear long sleeves, hat and closed shoes;
- Use tick repellant, such as permenome on clothes, and a repellant containing DEET on the skin;
- Check body for ticks daily; and
- Shower immediately after work and wash clothes daily.

2.2.3.3 Rabies and Other Animals. To avoid exposure to rabies, all site personnel shall avoid all wild animals. Rabies are preventable if treatment is started soon after initial exposure. If confirmation that a wild animal has rabies cannot be made, medical treatment of any bites shall be obtained. Rabies is not curable once symptoms or signs of rabies appear, stressing the need for immediate medical attention. Rats and other animals may be in or near the abandoned structures, so the same avoidance strategy to limit the possibility of bites and infections is suggested. Again, immediate medical help should be sought in the event of exposure.

***2.2.3.4 Blood-Borne Pathogens*.** Hypodermic needles have been noted at the project area. These and other trash or waste are to be avoided; immediate medical attention is necessary upon exposure.

2.2.4 Activity Hazard Analysis. Table 1 presents a completed activity hazard analysis for the performance of the geomorphological and archaeological Phase IB survey at Brooklyn Navy Yard.

Table 1. Activity Hazard Analysis

PRINCIPAL STEPS	POTENTIAL SAFETY/ HEALTH HAZARDS	RECOMMENDED CONTROLS
1. Walkover and setting up of testing grid 2. Excavate shovel tests by hand	Prime concerns covered in see Section 2.2	In general: use of administrative controls (site control and general safety rules)
3 Excavate trenches via backhoe and/or auger 4. Hand-held or hand-powered screening of shovel test and trench soils 5. Backfill shovel tests by hand; trenches via manual and mechanical means 6. Mapping via GPS instruments and compass/tape 7. Taking notes on shovel test and trench characteristics and general field conditions, methods and results 8. Photographic documentation	Chemical hazards: 1. exposure to toxic chemicals in the soil and water (low) 2. Known PCB area of contamination Physical hazards: noise (low); cold stress possible; fire explosion (low); falls, skin punctures, lacerations, eye injuries, etc. from shovel test procedures possible; injuries from operation of heavy machinery possible; motor vehicle and on-site injuries possible; severe weather possible; medical emergencies possible; building hazards and utilities present Biological hazards: poison ivy present; ticks, rabies, other animal and blood-borne derived pathogens possible exposure.	Chemical hazards: 1. Be alert for such contamination signs as unusual soil discolorations and off smells; avoid pealing paints, and in-building materials. 2. Avoid; if not specific safety plan and hazardous waste training Physical hazards: awareness of surrounding terrain, field conditions, and crew members; knowledge of specific field safety procedures including those for trench excavation, cold stress, and motor vehicle operation; use of proper clothing; avoid structurally unsound areas Biological hazards: ability to identify poisons plants and animals and then avoid; clothing to reduce exposure; immediate medical attention if exposed; specific clean-up procedure
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Shovels, trowels 2. Backhoe/auger 3. Hand-powered screens 34 GPS units, cameras, compasses, tapes	Daily inspection of equipment Regular safety oversight	Safety plan review Daily safety briefings, or as needed

3.0 STANDARD SAFE WORKING PRACTICES

The following general safe work practices apply:

- Eating, drinking, chewing gum or tobacco and smoking are prohibited within the work area.
- Upon leaving the work area, hands, face and other exposed skin surfaces should be thoroughly washed.
- Unusual site conditions shall be promptly conveyed to the SSO/Field Director/Principal Investigator and project management for resolution.
- A first-aid kit shall be available at the site.
- Field personnel should use all their senses to alert themselves to potentially dangerous situations (e.g., presence of strong, irritating, or nauseating odors).

A minimum of Level D personnel protective clothing will be required for work activities. If visual observations or odors suggest the potential for additional hazardous substances, or if physical or biological hazards exists that were not anticipated, work activities will be halted, the work area will be evacuated and conditions will be evaluated by project safety and management personnel. The following minimum requirements will be used:

- Personal hygiene practices such as no eating, drinking or smoking will be followed.
- If severe dusty conditions hazardous to the crew are present, soils will be dampened to mitigate dust. All artifacts will be cleaned before leaving the work area.
- Field personnel must attend safety briefings and should be familiar with the physical characteristics of the investigation, including:
  - Accessibility to associates, equipment, and vehicles;
  - Areas of known or suspected contamination;
  - Site access;
  - Routes and procedures to be used during emergencies;
- Personnel will perform all investigation activities with a buddy who is able to:
  - Provide his or her partner with assistance;
  - Notify the SSO/Field Director/Principal Investigator if emergency help is needed;
- Excavation activities shall be terminated immediately in event of thunder and/or electrical storm.
- The use of alcohol or drugs at the site is strictly prohibited.

4.0 PERSONNEL SAFETY EQUIPMENT

As required by OSHA in 29 CFR 1920.132, this plan constitutes a workplace hazard assessment to select personnel protective equipment (PPE) to perform the archaeological and architectural investigation. Attachment 3 provides the required signature page certifying that this assessment has been performed and approved.

The PPE to be donned by on-site personnel during this investigation are those associated with the industry standard of Level D Protective clothing and equipment to initiate the project will include:

- Work clothes

- Work boots
- Work gloves
- Hard hat if work is conducted in areas with overhead danger or during construction
- Hearing protection as necessary

5.0 EMERGENCY INFORMATION

In the event of an emergency, the field team members or the SSO/Field Director will employ emergency procedures. A copy of emergency information will be kept in the field vehicle or with the field crew and will be reviewed during the initial site briefing. Copies of emergency telephone numbers and directions to the nearest hospital will be prominently posted in the field vehicle.

5.1 EMERGENCY MEDICAL TREATMENT AND FIRST AID

A first-aid kit large enough to accommodate anticipated emergencies will be kept in the field. If any injury should require advanced medical assistance, emergency personnel will be notified and the victim will be transported to the hospital. Two sets of keys for the field vehicle will be on-site: one with the Field Director or one with another field crew member.

In the event of an injury or illness, work will cease until the SSO/Field Director have examined the cause of the incident and have taken appropriate corrective action. Any injury or illness, regardless of extent, is to be reported on the Accident Report Form.

5.2 EMERGENCY TELEPHONE NUMBERS AND ROUTE TO HOSPITAL

Emergency telephone numbers for medical and chemical emergencies will be posted in the field vehicle and are listed below:

Nearest Hospitals:

NY City Health & Hosp Corp
100 N Portland Ave, Brooklyn, NY
718-403-9660 (0.3 mile away)

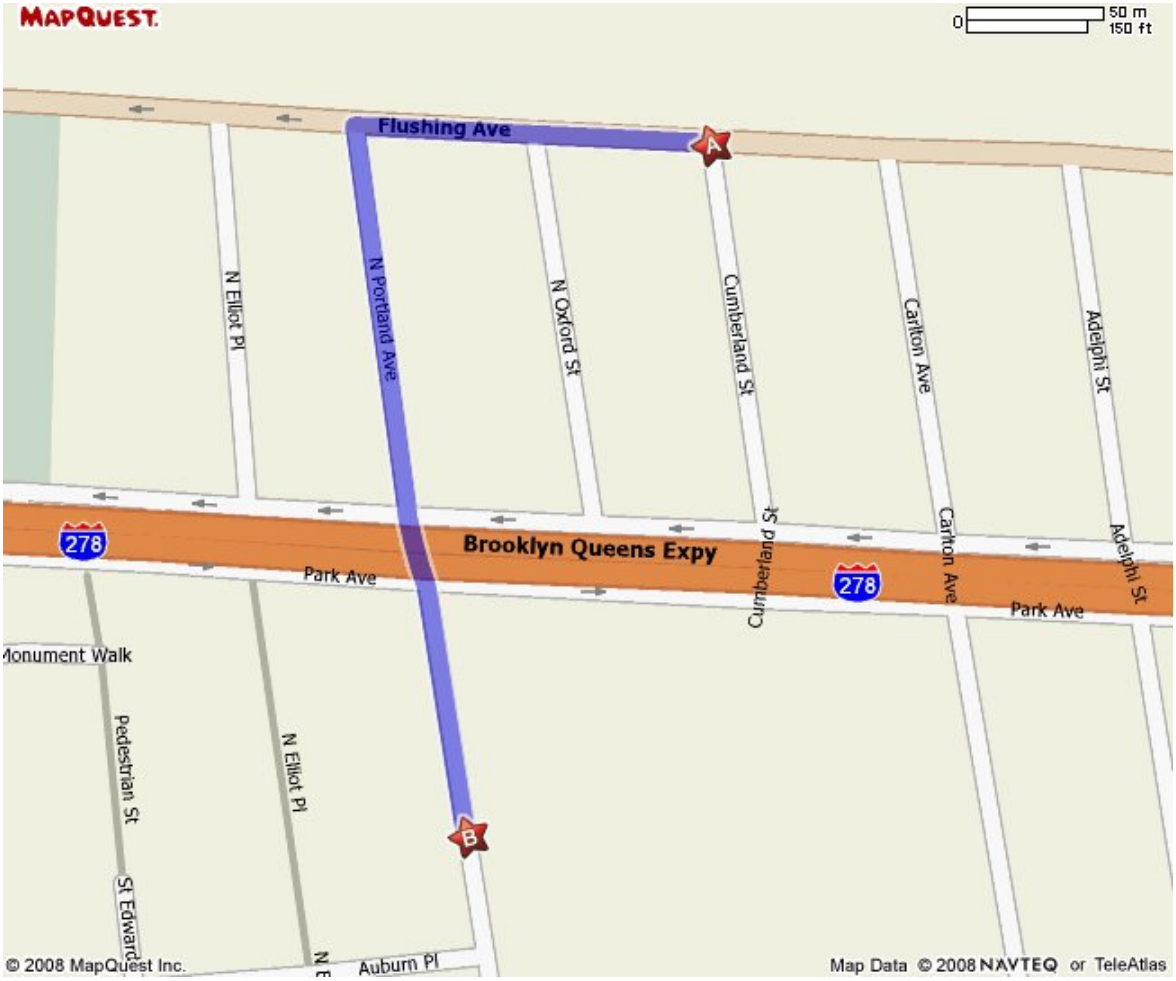
Brooklyn Hospital
240 Willoughby St # 2, Brooklyn, NY
718-250-6915 (0.78 mile away)

Route to NY City Health & Hosp Corp
100 N Portland Ave, Brooklyn, NY
718-403-9660 (0.3 mile away)

A: 68 Flushing Ave, Brooklyn, NY 11205

START	1:	Start out going WEST on FLUSHING AVE toward N OXFORD ST.	0.1 mi
	2:	Turn LEFT onto N PORTLAND AVE.	0.2 mi
END	3:	End at 100 N Portland Ave Brooklyn, NY 11205-2005	

B: 100 N Portland Ave, Brooklyn, NY 11205-2005
Total Time: 1 minuteTotal Distance: 0.32 miles



Route to Brooklyn Hospital
240 Willoughby St # 2, Brooklyn, NY
718-250-6915 (0.78 mile away)

A: 68 Flushing Ave, Brooklyn, NY 11205

START	1:	Start out going WEST on FLUSHING AVE toward N OXFORD ST.	0.3 mi
	2:	Turn LEFT onto NAVY ST.	0.3 mi
	3:	NAVY ST becomes ASHLAND PL.	0.1 mi
	4:	Turn LEFT onto WILLOUGHBY ST.	0.0 mi
END	5:	End at 240 Willoughby St Ste 2 Brooklyn, NY 11201-5428	

Total Time: 2 minutes Total Distance: 0.78 mile

Project Safety Personnel Contacts:

Panamerican:

Project Manager (Michael A. Cinquino)	(716) 821-1650 (office) (716) 308-2256 (cell)
Project Safety Officer (Peter J. Gorton)	(716) 821-1650 (office) (716) 308-8220 (cell)
Project Safety Manager (Michele H. Hayward)	(716) 821-1650 (office) (716) 812-5674 (cell)

New York Corps of Engineers:

Christopher Ricciardi	(917) 790-8630 (office) (917) 892-2033 (cell)

EMERGENCY SIGNAL FOR SITE OPERATIONS

Verbal communications between workers or use of the site vehicle's horn repeated at intervals of three short beeps shall be used to signal all on-site personnel to immediately evacuate the area and report to the vehicle parking area.

5.3 EMERGENCY STANDARD OPERATING PROCEDURES

The following standard operating procedures are to be implemented by on-site personnel in the event of an emergency. The SSO/Field Director shall manage response actions.

- Upon notification of injury to personnel, the designated **emergency signal shall be sounded**, if necessary. All personnel are to terminate their work activities and assemble with the SSO/Field Director. The emergency medical service and hospital emergency room shall be notified of the situation. If the injury is minor, but requires medical attention, the SSO/Field Director shall accompany the victim to the hospital and provide assistance in describing the circumstances of the accident to the attending physician.
- Upon notification of an equipment failure or accident, the SSO/Field Director shall determine the effect of the failure or accident on site operations. If the failure or accident affects the safety of personnel or prevents completion of the scheduled operations, all personnel are to leave the area until the situation is evaluated and appropriate actions taken.
- Upon notification of a natural disaster or severe weather, such as tornado, high winds, flood, thunderstorm or earthquake, on-site work activities are to be terminated by the SSO/Field Director and all personnel are to evacuate the area.

5.4 EMERGENCY RESPONSE FOLLOW-UP ACTIONS

Following activation of the Emergency Response Plan, the SSO/Field Director shall notify the project manager and other project and safety managers. The SSO/Field Director shall submit a written report documenting the incident within two working days (see Attachments).

5.5 MEDICAL TREATMENT FOR SITE ACCIDENTS/INCIDENTS

The SSO/Field Director shall be informed of any site-related injury, exposure or medical condition resulting from work activities. All personnel are entitled to medical evaluation and treatment in the event of a site accident or incident.

Site Medical Supplies and Services

The SSO/Field Director or a trained first-aid crew member shall evaluate all injuries at the site and render emergency first-aid treatment as appropriate. If an injury is minor but requires professional medical evaluation, the SSO/Field Director shall escort the employee to the appropriate emergency room. For major injuries occurring at the site, emergency services shall be requested.

First-Aid Kits

A first-aid kit shall be available, readily accessible and fully stocked. The first-aid kit shall be located within specified vehicles used for on-site operations.

5.6 UNIVERSAL PRECAUTIONS

Universal precautions shall be followed on-site at all times. These consist of treating all human blood and certain body fluids as being infected with Human Immune Deficiency Virus (HIV), Hepatitis B virus (HBV), and other bloodborne pathogens. Clothing and first-aid materials visibly contaminated with blood or other body fluids will be collected by the SSO/Field Director and placed into a biohazard bag. Individuals providing first aid or cleanup of blood- or body-fluid contaminated items should wear latex gloves. If providing CPR, a one-way valve CPR device should be used. Biohazard bags, latex gloves, and CPR devices will be included in the site first-aid kits.

Work areas visibly contaminated with blood or body fluids shall be cleaned using a 1:10 dilution of household bleach. If equipment becomes contaminated with blood or body fluids, and cannot be sufficiently cleaned, the equipment shall be placed in a plastic bag and sealed. Any personnel servicing the equipment shall be made aware of the contamination, so that proper precautions can be taken.

6.0 RECORD KEEPING

The SSO/Field Director are responsible for site record keeping. Prior to the start of work, they will review this plan; if there are no changes to be made, they will sign the cover sheet and forward a copy to the appropriate safety and project managers.

The Site Safety Briefing Form will be completed prior to the initiation of investigation activities. The Plan Acceptance Form should be filled out by all archaeological survey personnel working on the site. The Accident Report Form should be completed by the Field Director in the event that an accident occurs and forwarded to Panamerican's Project Manager.

7.0 PERSONNEL TRAINING REQUIREMENTS

7.1 INITIAL SITE ENTRY BRIEFING

Prior to initial site entry, the SSO/Field Director shall provide all personnel (including site visitors) with site-specific health and safety training. A record of this training shall be maintained. This training shall consist of the following:

- Discussion of the elements contained within this plan
- Discussion of responsibilities and duties of key site personnel
- Discussion of physical, biological and chemical hazards present at the site
- Discussion of work assignments and responsibilities
- Discussion of the correct use and limitations of the required PPE
- Discussion of the emergency procedures to be followed at the site
- Safe work practices to minimize risk
- Communication procedures and equipment
- Emergency notification and procedures

7.2 ADDITIONAL TRAINING

The following additional training is required for a minimum of one full-time site worker.

- Red Cross Standard First Aid
- Red Cross CPR

7.3 DAILY SAFETY BRIEFINGS

The SSO/Field Director will determine if a daily safety briefing with all site personnel is needed. The SSO/Field Director shall document the daily briefings in the field log book. This documentation shall include health and safety topics covered and attendees at the briefing. The briefing shall discuss the specific tasks scheduled for that day and the following topics:

- Specific work plans
- Physical, chemical or biological hazards anticipated
- Fire or explosion hazards
- PPE required
- Emergency procedures, including emergency escape routes, emergency medical treatment, and medical evacuation from the site
- Weather forecast for the day
- Buddy system
- Communication requirements
- Site control requirements
- Material handling requirements

References

Agency for Toxic Substances and Disease Registry (ATSDR)

2001 Polychlorinated Biphenyls [fact sheet]. Division of Toxicology ToxFAQs. U.S. Department of Health and Human Services, Public Health Service.

Geismar, Joan H., and Stephen J. Oberon

1995 *Stage 1-B Field Monitoring, Monitoring Well and Test Boring Locations, Brooklyn Navy Yard Cogeneration Project, Borough of Brooklyn, Kings County, New York*. TAMS Consultants, Inc., np. Prepared for Blasland & Bouck Engineers, P.C., Middletown, NY.

1996 *Stage I-B Field Monitoring Test Boring, Electric Line and Overhead Support Locations, Brooklyn Navy Yard Cogeneration Project, Borough of Brooklyn, Kings County, New York*. Prepared for Roux Associates, Inc., Islandia, NY.

Hanley, Robert J., Christine M. Longiaru, Mark A. Steinback, John Wah, and Michael A. Cinquino

2008 *Phase IA Cultural Resources Investigation for Admiral's Row Section, Former Brooklyn Navy Yard, Brooklyn, Kings County, New York.* Prepared by Panamerican Consultants, Inc., Buffalo Branch. Prepared for Tetratech, Inc., Portland, ME, under contract to U.S. Army Corps of Engineers, New York District.

New York City Soil Survey Staff

2005 *New York City Reconnaissance Soil Survey*. U.S. Department of Agricultural Natural Resources Conservation Service, Staten Island, NY.

Quay Consulting, LLC

2006 *Site Investigation Report – Phase II Environmental Assessment. Officer's Quarters, Brooklyn Navy Yard, Brooklyn, NY.* Prepared by Quay Consulting, LLC, Nyack, NY. Prepared for U.S. Army Corps of Engineers, New York District.

2007 *Site Investigation Report – Supplemental Phase II Environmental Assessment. Officer's Quarters, Brooklyn Navy Yard, Brooklyn, NY.* Prepared by Quay Consulting, LLC, Nyack, NY. Prepared for U.S. Army Corps of Engineers, New York District.

Attachment 1

Polychlorinated Biphenyls (PCB) Fact Sheet

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

POLYCHLORINATED BIPHENYLS

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about polychlorinated biphenyls. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Polychlorinated biphenyls (PCBs) are a mixture of individual chemicals which are no longer produced in the United States, but are still found in the environment. Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults and neurobehavioral and immunological changes in children. PCBs are known to cause cancer in animals. PCBs have been found in at least 500 of the 1,598 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polychlorinated biphenyls?

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

What happens to PCBs when they enter the environment?

❑ PCBs entered the air, water, and soil during their manufacture, use, and disposal; from accidental spills and leaks during their transport; and from leaks or fires in products containing PCBs.

❑ PCBs can still be released to the environment from hazardous waste sites; illegal or improper disposal of industrial wastes and consumer products; leaks from old electrical transformers containing PCBs; and burning of some wastes in incinerators.

❑ PCBs do not readily break down in the environment and thus may remain there for very long periods of time. PCBs can travel long distances in the air and be deposited in areas far away from where they were released. In water, a small amount of PCBs may remain dissolved, but most stick to organic particles and bottom sediments. PCBs also bind strongly to soil.

❑ PCBs are taken up by small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs accumulate in fish and marine mammals, reaching levels that may be many thousands of times higher than in water.

How might I be exposed to PCBs?

❑ Using old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, that were made 30 or more years ago. These items may leak small amounts of PCBs into the air when they get hot during operation, and could be a source of skin exposure.

❑ Eating contaminated food. The main dietary sources of PCBs are fish (especially sportfish caught in contaminated lakes or rivers), meat, and dairy products.

❑ Breathing air near hazardous waste sites and drinking contaminated well water.

❑ In the workplace during repair and maintenance of PCB transformers; accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

How can PCBs affect my health?

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage. PCB exposures in the general population are not likely to result in skin and liver effects. Most of the studies of health effects of PCBs in the general population examined children of mothers who were exposed to PCBs.

Animals that ate food containing large amounts of PCBs for short periods of time had mild liver damage and some died. Animals that ate smaller amounts of PCBs in food over several weeks or months developed various kinds of health effects, including anemia; acne-like skin conditions; and liver, stomach, and thyroid gland injuries. Other effects

of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects.

How likely are PCBs to cause cancer?

Few studies of workers indicate that PCBs were associated with certain kinds of cancer in humans, such as cancer of the liver and biliary tract. Rats that ate food containing high levels of PCBs for two years developed liver cancer. The Department of Health and Human Services (DHHS) has concluded that PCBs may reasonably be anticipated to be carcinogens. The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

How can PCBs affect children?

Women who were exposed to relatively high levels of PCBs in the workplace or ate large amounts of fish contaminated with PCBs had babies that weighed slightly less than babies from women who did not have these exposures. Babies born to women who ate PCB-contaminated fish also showed abnormal responses in tests of infant behavior. Some of these behaviors, such as problems with motor skills and a decrease in short-term memory, lasted for several years. Other studies suggest that the immune system was affected in children born to and nursed by mothers exposed to increased levels of PCBs. There are no reports of structural birth defects caused by exposure to PCBs or of health effects of PCBs in older children. The most likely way infants will be exposed to PCBs is from breast milk. Transplacental transfers of PCBs were also reported In most cases, the benefits of breast-feeding outweigh any risks from exposure to PCBs in mother's milk.

How can families reduce the risk of exposure to PCBs?

❑ You and your children may be exposed to PCBs by eating fish or wildlife caught from contaminated locations. Certain states, Native American tribes, and U.S. territories have issued advisories to warn people about PCB-contaminated fish and fish-eating wildlife. You can reduce your family's exposure to PCBs by obeying these advisories.

❑ Children should be told not play with old appliances, electrical equipment, or transformers, since they may contain PCBs.

❑ Children should be discouraged from playing in the dirt near hazardous waste sites and in areas where there was a transformer fire. Children should also be discouraged from eating dirt and putting dirty hands, toys or other objects in their mouths, and should wash hands frequently.

❑ If you are exposed to PCBs in the workplace it is possible to carry them home on your clothes, body, or tools. If this is the case, you should shower and change clothing before leaving work, and your work clothes should be kept separate from other clothes and laundered separately.

Is there a medical test to show whether I've been exposed to PCBs?

Tests exist to measure levels of PCBs in your blood, body fat, and breast milk, but these are not routinely conducted. Most people normally have low levels of PCBs in their body because nearly everyone has been environmentally exposed to PCBs. The tests can show if your PCB levels are elevated, which would indicate past exposure to above-normal levels of PCBs, but cannot determine when or how long you were exposed or whether you will develop health effects.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.0005 milligrams of PCBs per liter of drinking water (0.0005 mg/L). Discharges, spills or accidental releases of 1 pound or more of PCBs into the environment must be reported to the EPA. The Food and Drug Administration (FDA) requires that infant foods, eggs, milk and other dairy products, fish and shellfish, poultry and red meat contain no more than 0.2-3 parts of PCBs per million parts (0.2-3 ppm) of food. Many states have established fish and wildlife consumption advisories for PCBs.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological profile for polychlorinated biphenyls (PCBs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Attachment 2

Safety Personnel Credentials and Training Certificates

Panamerican Consultants, Inc.

Peter J. Gorton
Senior Hazardous Waste Specialist

EDUCATION

M.P.H., Public Health/Environmental Science, Yale University School of Medicine, Department of Epidemiology and Public Health, 1979
B.S., Environmental Science, University of Massachusetts, 1977

SUMMARY OF QUALIFICATIONS

As a senior environmental scientist and project manager, Mr. Gorton's main duties include performing hazardous and mixed waste assessments for the private sector as well as government clients over a broad spectrum of disciplines which include remedial investigations, UST closures and forensic assessments, health and safety, regulatory compliance, waste management, project management, spill response, industrial hygiene, sampling programs, and preparation of procedures, plans, and manuals required to support all of the above areas.

Mr. Gorton has performed hundreds of Phase I and Phase II environmental assessments, UST closure projects, hazardous and mixed waste sampling, NEPA and SEQRA environmental assessments, regulatory compliance reviews and audits, and health and safety planning and oversight. An overview of his general and health and safety experience is detailed below.

For AT&T Bell Laboratories, Mr. Gorton managed the development of environmental compliance manuals for six major research and development facilities in New Jersey, Pennsylvania, Illinois, Massachusetts, Ohio, and Georgia. Mr. Gorton is widely experienced in environmental regulations. He has performed hundreds of environmental projects under the regulatory requirements of Brownfields guidance, NEPA, RCRA, CERCLA/SARA, TSCA, OSHA, PSD and NPDES permitting, SPCC, orders on consent, and other state and federal regulations. Additionally, he is familiar with both federal and New York State Universal Waste regulations associated with various projects involving demolition and waste streams including batteries, pesticides, mercury-containing thermostats, and lamps. Experience has included reviewing Universal Waste Management Plans and waste specific guidelines.

For the City of Buffalo, Mr. Gorton has conducted/managed numerous Phase I and Phase II Environmental Site Assessments, remediation projects at PCB and metal/PAH contaminated properties, as well as UST closures and petroleum contamination investigations. Currently Mr. Gorton is the project manager for a Site Assessment/Remedial Alternative Report (SI/RAR) investigation under the New York State Brownfields Bond Act.

For the New York District Corps of Engineers, Mr. Gorton prepared health and safety plans and managed or performed the health and safety oversight for Panamerican Consultants, Inc. (PCI) for at least three archaeological surveys. These projects included a Phase I archaeological investigation at Seneca Army Depot Activities, Romulus, New York, for which the health and

safety issue was the potential contamination of site areas with heavy metals, semi and volatile organics, unexploded ordnance (UXO), and radiological contaminants; a Phase II archaeological investigation along the Passaic River in the City of Newark, New Jersey, which involved health and safety planning and field oversight during deep testing in an area that not only was the historic location of the Morris Canal but also a location of known industrial development; and, health and safety planning and management for surface and subsurface archaeological investigations at Picatinny Arsenal, Dover, Morris County, New Jersey. Mr. Gorton also prepared health and safety plans for archaeological surveys for five Hudson River PCBs Superfund sites

Under a grant for the State of New York Department of Labor, Mr. Gorton developed a health and safety program and training manual directed at health and safety during archaeological and cultural resources field surveys. The manual included information on physical, chemical and biological hazards, risk awareness, hazard communication, emergency planning and safety precautions specific to the archaeological and cultural resources profession.

For other public and private sector industrial clients, Mr. Gorton has provided extensive environmental and technical expertise:

- Completed Brownfields assessments under both the New York State Bond Act and U.S. Environmental Protection Agency (USEPA) guidance and requirements.

- Conducted numerous cost effective UST closure and sampling programs to investigate subsurface petroleum contamination in accordance with NYDEC (STARS and SPILLS guidance) and USEPA requirements for both municipal and private clients. Performed forensic assessments for various clients resulting in development of cost sharing and spill cleanup responsibilities.

- Provided regulatory compliance consultation for manufacturing clients including completing SARA Form R review and revisions, including performance calculations and review of facility information to determine reporting requirements to the USEPA under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA); and managing New York State Facility Air Permit requirements in a manufacturing environment.

CERTIFICATIONS AND OTHER TRAINING

Year	Course Title
Current	Certified Hazard Control Manager (CHCM) - Masters Level
1998	State Environmental Quality Review Workshop - SEQR Basic and Advanced Topics
1997	Clean Air Act, Section 112 (r)(7) Risk Management Programs/Plans
1997	Lead Inspector Certification # LIC-97/04/14-02
1996	ERIISnet Environmental Risk Information & Imaging Software Training
1996	Data Quality Objectives (DQOs) Training For Managers

Panamerican Consultants, Inc.

Michele H. Hayward, Ph.D., RPA
Senior Archaeologist

EDUCATION

Ph.D. Anthropology, The Pennsylvania State University, 1986
M.A. Anthropology, The Pennsylvania State University, 1975
B.A. Anthropology, Beloit College, 1972

EXPERIENCE

Dr. Hayward is currently a Senior Archaeologist with Panamerican Consultants, Inc. She has more than twenty-five (25) years of experience conducting archaeological investigations and cultural resource management (CRM) projects throughout the Caribbean, Mexico, Central America, and the Eastern United States. As Principal Investigator, Field Director, and Laboratory Director for all levels of archaeological investigations, her duties have included reconnaissance surveys and preliminary and intensive data recovery excavations of prehistoric and historic sites; archival research; and historic and prehistoric data analysis. She has extensive expertise in report preparation and proposal writing as well as designing archaeological field strategies at all levels.

Panamerican's varied working conditions and staff led to her current particular interest in health and safety issues in archaeology. She began to realize the need to raise the level of awareness of such issues among professional archaeologists, field crews who work for Cultural Resource Management firms and students. Dr. Hayward has been actively engaged in this effort by soliciting grants to conduct health and safety training sessions for archaeologists through the New York Department of Labor, as well as drafting or participating in Health and Safety Plans on several projects. Examples of her archaeological and safety experience are detailed below.

PANAMERICAN CONSULTANTS, INC. EXPERIENCE (1992 TO PRESENT)

2006 Principal Investigator. Phase IB survey for prehistoric or historic resources at two locations, Bayswater State Park and Paerdegat Basin, within Jamaica Bay, New York. The U.S. Army Corps of Engineers, New York District, along with two other city and state governmental entities, are sponsoring various native vegetation restoration and water quality improvement projects at these two locations. Primarily mechanical excavation with a backhoe was employed to locate any cultural resources, largely because thick natural or human-derived fill layers were deposited above the historic and prehistoric marshland deposits. The project also required a Health and Safety Plan before field work could begin which was drafted by Dr. Hayward and approved by the Corps of Engineers. The plan addressed heavy mechanical equipment safety, proper excavation techniques and depths, as well as potential water hazards and contaminated soils.

2003-2006 Co-Principal Investigator and Co-Field Director. Phase I, II, Limited Mitigation and Monitoring for the Thomas Jefferson Hall (Cadet Library and Learning Center) at the U.S. Military

Academy at West Point, Orange County, New York. The Academy is constructing a new library on the Plain that during its long history was used for a variety of purposes including a possible burial ground, an artillery field, and recreational facilities. The four phases of research involving mechanical and hand excavations, yielded evidence of some of these past activities, but more importantly uncovered an extensive midden. A high concentration of glass, ceramics, bone, personal items and other materials were imbedded within an ash/coal ash/cinder matrix that likely represented materials collected from locations within the military installation towards the mid-1800s and deposited to level out this section of the Plain. Throughout the investigative phases the crew was made aware of the potential dangers including cave-ins from unconsolidated trench walls, ticks bearing Lyme disease and heat stress. Dr, Hayward and the crew also had to coordinate with the construction personnel regarding safety procedures.

2004-2005 Co-Principal Investigator. Phase III investigation of the Hacienda Rodríguez/Colonia Monserrate located in Naguabo, Puerto Rico. The local Aqueduct and Sewer Authority is building a large reservoir that will place features of the nineteenth and twentieth century sugar production and cattle-raising complex at the bottom of the body of water. The investigation involved two separate, but contingent phases. A search for documents related to the complex was begun, coupled with a Ground Penetrating Radar survey to locate any additional features to the already noted surface elements of a chimney, Jamaica Train, and possible mill platform. The radar survey confirmed the presence of the known elements, as well as identifying several other subsurface anomalies. The second phase comprised primarily mechanical, supplemented by hand, excavation of the known features to prepare them for measured drawing and photographic documentation, in addition to investigation of the anomalies. Health and safety issues involved with this project concerned heavy machinery protocols, heat stress and coordination with the construction crew and schedule; all were successfully addressed through meetings and agreed upon procedures.

GRANTS RECEIVED TO CONDUCT HEALTH AND TRAINING SESSIONS

2005/2006 State of New York, Department of Labor, Occupational Safety and Health Training and Education Program. Funds to conduct health and safety training sessions throughout New York State designed specifically for archaeology professionals and students. Co-Primary Trainer: Mr. Peter J. Gorton, M.P.H., C.H.C.M., Health and Safety Specialist.

2002/2003 State of New York, Department of Labor, Occupational Safety and Health training and Education Program. Funds to conduct health and safety training sessions throughout New York State designed specifically for archaeology professionals and students. Co-Primary Trainer: Mr. Peter J. Gorton, M.P.H., C.H.C.M., Health and Safety Specialist.

2000/2001 State of New York, Department of Labor, Occupational Safety and Health training and Education Program. Funds to conduct health and safety training sessions throughout New York State designed specifically for archaeology professionals and students. Co-Primary Trainer: Mr. Peter J. Gorton, M.P.H., C.H.C.M., Health and Safety Specialist.

Attachment 3

Forms

SITE-SPECIFIC HEALTH AND SAFETY PLAN
AND WORK PLACE HAZARD ASSESSMENT

Project Name ..... Admiral's Row, Brooklyn Navy Yard, Phase IB

Project Site Location ..... Brooklyn, New York

Project Manager..... Dr. Michael A. Cinquino

Field Director.....Dr. Donald Smith

Architectural Historian .....Christine Longiaru

Health and Safety Plan Preparer .....Peter J. Gorton, MPH, CHCM

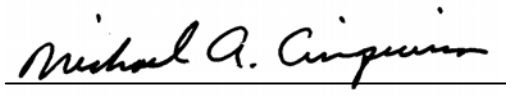
Preparation Date .....January 2009

HEALTH AND SAFETY PLAN REVIEW AND CERTIFICATION THAT WORK PLACE HAZARD ASSESSMENT HAS BEEN PERFORMED (29CFR 1910.132):

Peter J. Gorton, MPH, CHCM, Health and Safety Officer, Panamerican Consultants, Inc.

1/9/09
(Date)

Michael A. Cinquino, Ph.D., Project Manager, Panamerican Consultants, Inc.



1/9/09
(Date)

PANAMERICAN CONSULTANTS, INC.
Plan Acceptance Form

I have read the HEALTH AND SAFETY AND ACCIDENT PREVENTION PLAN for the PHASE IB CULTURAL RESOURCE INVESTIGATION AT ADMIRAL'S ROW, BROOKLYN NAVY YARD, KINGS COUNTY, NEW YORK. I understand its content and agree to comply with all of the safety measures described within it.

Name	Signature	Date

SITE SAFETY BRIEFING FORM

ON-SITE SAFETY MEETING

Project: _____

Date _____ Time _____ Job No. _____

Address _____

Specific Location _____

Type of Work _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment _____

Chemical Hazards _____

Emergency Procedures _____

Hospital/Clinic _____ Phone _____

Hospital Address _____

Special Equipment _____

Other _____

ATTENDEES

Name Printed Signature

_____

_____

_____

_____

_____

_____

Meeting Conducted By: _____ _____

Name Printed Signature

_____ _____

Site Safety Officer Team Leader

ACCIDENT/EXPOSURE FORM

Employee Name _____ Date of Birth _____
Sex: Male _____ Female _____ Job Title _____ Social Security No. _____
Office No. _____ Office Location _____ Date of Hire _____
Hours Usually Worked: Hours per day _____ Hours per Week _____ Total Hours Weekly _____

Where did accident or exposure occur? (include address) _____

_____

County _____ On employer's premises? Yes _____ No _____

What was employee doing when injured? (be specific) _____

_____

_____

How did the accident or exposure occur? (describe fully) _____

_____

_____

What steps could be taken to prevent such an occurrence? _____

_____

Object or substance that directly injured employee _____

_____

Describe the injury or illness _____ Part of body injured _____

Name and address of physician _____

If hospitalized, name and address of hospital _____

Date of injury / illness _____ Time of day _____ Loss of one or more days of work? Yes/No _____
If yes, date last worked _____

Has employee returned to work? _____ If yes, date returned _____

Did employee die? _____ If yes, date _____

Completed by (print) _____ Signature _____

Title _____ Date _____

An Accident/Exposure Report must be completed by the Supervisor or Site Safety Officer immediately upon learning of the incident. The completed report must be immediately transmitted to the Office Administrative Manager.

Appendix H
SCOPE OF WORK

Scope of Work -
Phase IB Archaeological Field Testing
For the Admiral's Row section of the former Brooklyn Navy Yard
Brooklyn (Kings County), New York
Contract Number: W912DS-07-D-0005, (1st Option Year) Tetra Tech
October 14, 2008

I. Introduction

The U.S. Army Corps of Engineers, New York District (District) is currently assisting the U.S. Army National Guard Bureau (NGB) in their undertaking of removing the existing Admiral's Row section of the former Brooklyn Navy Yard located in the Greenpoint section of Brooklyn (Kings County), New York, from the Federal Government's ownership and disposing of the property as per Public Law 100-202.

As an agency of the Federal government, the Army has certain responsibilities regarding the identification and protection of cultural resources that may be eligible for inclusion on the National Register of Historic Places (NRHP). As part of project planning, Federal statutes and regulations require the identification of significant cultural resources that are eligible for the NRHP and mitigation of adverse impacts to such resources, if identified. The Federal statutes and regulations authorizing the Corps to undertake these responsibilities include Section 106 of the National Historic Preservation Act (NHPA) as amended through 2004, the Abandoned Shipwreck Act of 1987, and the Advisory Council on Historic Preservation Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800).

This scope of work requires a Phase IB Archaeological Field Testing of the project area. The contractor will conduct Geomorphological and Back-Hoe testing and excavate Standardized Test Pits within the project area, based on the initial proposed Phase IB testing plan identified in the Phase IA report (Appendix B) and revised in consultation between the contractor, District, NGB and the New York State Office of Parks, Recreation and Historic Preservation (NY SHPO). The contractor will prepare a written report based on the field work including recommendations for continuing the cultural resource process, if warranted.

This Scope of Work is to be contracted through Tetra-Tech (formerly Northern Ecological and Associates) using the services of their subcontractor, Panamerican Consultants, Inc. Their combined expertise and previous outstanding work on the Phase IA for this particular project, and other District projects in the area, make them the prime main and subcontractor candidates for this phase of the overall Cultural Resources project.

II. Project Description

A. Project Area (see Appendix A)

Admiral's Row is located in the southwestern corner of the former Brooklyn Navy Yard (Flushing Avenue and Navy Street) in the Greenpoint section of Brooklyn (Kings County), New York. In the mid 1980s the majority of the Brooklyn Navy Yard was sold to the City of New York by the Federal Government. This particular parcel (approximately 7 acres) remained with the Federal Government and was transferred to the Department of the Army. At the time, it was anticipated that the New York Army National Guard (NYARNG) would use the property for various administrative purposes. The ten standing domestic houses and one barn/shed were not utilized and all of the structures fell into a state of disrepair.

Congress authorized the Department of the Army (Public Law 100-202) to dispose of the property by sale at fair market value to the City of New York Should the City of New York decide not to purchase the property, it will be disposed of through the USACE, New York District via other means.

B. Project Plans

It is the goal of the NGB to dispose of the property, as per Congress' direction. The City of New York (City), through an agreement with the Brooklyn Navy Yard Development Corporation (BNYDC), a not-for-profit organization that has a long term lease with the City as the management and development administrators for the rest of the former Navy Yard, has expressed interest in obtaining the property. Their current proposal is to construct a supermarket, with parking lot, and a new light industrial building for manufacturing purposes. The NGB continues to work through the National Historic Preservation Act (NHPA) Section 106 process to develop mitigation strategies to address the adverse effects of the proposed disposal to the historic properties within the project area. In the event that the City of New York does not agree to proposed mitigation, the NGB will work with the USACE, New York District, to dispose of the property through other means.

III. Previous Research

Several Phase IA and IB reports related to the overall Brooklyn Navy Yard site and the Phase IA Documentary Report for Admiral's Row (USACE 2008), which was approved by the New York State Office of Parks, Recreation and Historic Preservation (NY SHPO), provide enough historical data to warrant Phase IB field testing.

IV. Requirements

Task 1: Testing Plan and Coordination

Based on the initial testing plan in the Phase IA Report, Panamerican Consultants, the District, the NGB and the NY SHPO will coordinate the approximate locations for the various tests that will occur on site. A testing plan will be developed prior to the commencement of field work.

There are several identified on-site sources of environmental contamination. The presence of waste water containers, transformers (PCB and petroleum) and waste stockpiles were identified. There are no reported existing or historic USTs or ASTs. Workers should avoid excavation in any solid waste piles and the PCB contaminated area in the Attachment C.

The presence of asbestos containing materials and PCB containing PILC electrical cables in structures, buildings and subsurface distribution utilities are all recognized environmental conditions leading to the potential for the presence of hazardous materials. PCB contamination is in the soil and on concrete surfaces near building 198.

Tasks 2: Safety Plan

A safety plan following the current Corps and OSHA regulations/guidance will be developed and submitted prior to the commencement of work.

The contractor shall prepare a site-specific Health and Safety Plan (HSP) which addresses procedures to minimize the risk of chemical exposures to environmental contamination, and physical accidents to on-site workers. The HSP covers each of the 11 required plan elements as specified in 29 CFR 1910.120 or equivalent state regulations. An example of a HSP can be found in the attached work plan for the site. Any plans for excavation in the PCB contaminated area must include proper personal protective equipment and waste management procedures. The contractor shall include a plan to manage investigation derived waste (IDW). Containerized IDW will be removed no later than two months after completion of field activities.

Task 3: Field Test

Approximately ten (10) Geomorphological tests trenches, ten (10) back-hoe test trenches and fifty (50) standardized test pits will be conducted in the agreed upon areas.

At a minimum, the archaeological fieldwork will be conducted according to the following criteria:

a. All field operations, including excavation techniques, recording methods, stratigraphic relationships, analytical techniques, the location of test units, etc. should be fully described to allow future researchers to reconstruct the work that was undertaken.

b. All excavation units must penetrate below all cultural strata or reach bedrock or culturally sterile subsoil.

c. All excavations must be refilled to the original surface contour upon completion of the fieldwork.

d. A ¼" mesh screen will be used to screen all excavated materials. Provenience will be recorded for all recovered materials. The Munsell color for all soils will be recorded.

e. The location of all excavations and any encountered cultural deposits will be recorded on a site map. All sites will be tied into durable reference points to facilitate relocation.

f. All measurements shall be given in Metric followed by the English conversion in parentheses.

g. All features identified in the field will be mapped and photographed.

Task 4: Data and Laboratory Analysis

The Contractor will conduct laboratory and field data analyses of excavated material and records generated by the fieldwork.

The Contractor will ensure that all artifacts are cleaned, labeled, stabilized and packaged in accordance with 36 CFR 79, *Curation of Federally-owned and Administered Archaeological Collections*.

Task 5/6: Report Preparation

The Contractor will prepare a detailed draft and final report to the standards specified in Section's VI, VII and VIII. Images and maps should be included in all reports.

Three (3) hard copies, prepared using 30% post consumer, recycled content paper, and three (3) digital copies, in ".pdf" format, of the draft report will be prepared and submitted to the District according to the schedule established in Section VIII. The draft report will be reviewed by the District, the NGB, and the NY SHPO. All comments of the reviewing agencies and will be transmitted to the Contractor prior to the submission of the final report.

Four (4) hard copies and four (4) digital copies of the final report shall be submitted to the Corps according to the schedule established in Section VIII. The final report shall address all comments made on the draft report.

The draft and final reports will clearly state whether additional studies are warranted. The reports will develop specific recommendations for conducting those studies.

Specific requirements for report preparation are presented in Section VI and VII.

Task 7: Project Management

The Contractor will be responsible for ensuring that all deliverables are provided on schedule and that all terms of this scope of work are satisfied. The Project Manager and the Principal Investigator shall consult with the Corps archaeologist throughout all project phases, as necessary.

V. General Field Requirements

All measurements, if any, will be in metric.

Photographs will be done digitally. Photographs must be in 300dpi and saved in a TIFF format. Captions should be provided for all images. All digital photographs will be included on a disk(s) submitted with the draft and final reports, as well as being inserted into the written report.

All fieldwork will be conducted in accordance with OSHA, the *Safety and Health Requirements Manual*, the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation* (48 FR 44734-37), the *Treatment of Archeological Properties* (Advisory Council on Historic Preservation 1980) and the *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State* (New York Archaeological Council 1994).

VI. Report Format and Content

Aside from the Testing Plan and Safety Plan, there will be a draft and final report produced.

The draft and final reports shall reflect and report on the fieldwork required by this Scope of Work. They shall be suitable for publication and be prepared in a format reflecting contemporary organizational and illustrative standards of professional archaeological journals. It must meet both the requirements for cultural resource protection and scientific standards of current research as defined in 36 CFR Part 800, NY SHPO Guidelines and the New York Archaeological Council's Handbook.

The reports will contain the following elements:

A. The **TITLE PAGE** will bear an appropriate inscription indicating the name and location of the project (city/village/town/county/state), authorship, including contributors, organizational affiliation and address, as well as the name and address of the prime/subcontractors, if applicable, the source of funds used to conduct the reported work, the agency and address to which the report

was submitted and the date (month and year) the report was submitted.

B. If someone, other than Contract Principal Investigator, writes the report, the cover and title page of the publishable report must bear the inscription "Prepared Under the Supervision of (Name), Principal Investigator." The Principal Investigator is required to sign the original copy of the report. In addition, the Principal Investigator must at least prepare a foreword describing the overall research context of the report, the significance of the work, and any other background circumstances relating to the manner in which the work was undertaken.

C. The **TABLE OF CONTENTS** will provide a list of all chapters, figure, tables, appendices, etc. presented in the report.

D. A **BRIEF SYNOPSIS/ABSTRACT** of the project's findings and the documentation conducted shall appear in the front of the report and will be suitable for publication as an abstract. The following items are requested by the SHPO:

a. The abstract should be limited to one or more pages and can be presented in outline or bullet form.

b. Project name/project title

c. Location, size, and boundaries of project area. Project area should include USGS citations, transportation boundaries, municipality and county names, survey boundaries, and approximate square miles.

d. The date of SHPO correspondence, if any.

e. Review authority.

f. Field and Recordation Methods.

g. Summary. Results should include the major facts of the report. For example, the number of targets investigated and documented.

h. Evaluations and impacts. This section includes a cursory assessment of the overall effects of the proposed project on the eligible sites.

i. Location where copies of this report on the survey area and sites within the survey area are on file.

E. An **INTRODUCTION** stating the purpose and goals of the report and summarizing all pertinent sections of the report. It should include the names of the project sponsor and contact person, the legislation relevant to the work being conducted, the geographic limits of the project area, approximate number of field hours, the dates of the study, the composition of the personnel, a project summary of findings, and a summary description of the documentation.

F. A **TESTING PLAN** containing the following:

a. Objectives

b. Properties investigated and recorded

c. Methodology: Description of field work and methods used; discussion of how properties were selected; discussion of rationale for level of investigation and documentation; discussion of any deviation from original methodology and any problems or biases encountered during project.

G. A **DESCRIPTION OF THE PHYSICAL SETTING,** summarizing the natural and physical factors relating specifically to the location of cultural resources. Minimally, this should include, with maps if appropriate, information on the project area's, natural and cultural environmental elements, listed or eligible New York or National Register buildings, sites, structures, objects, and/or districts in the area. This discussion should also address the urban/rural character of the environment, and recent human/natural disturbance. The discussion should also include a brief architectural analysis of the area, its general integrity, and overall physical conditions and layout.

H. A **LIMITED INCORPORATION OF INFORMATION FROM THE PHASE IA,** conducted in the study area.

I. A **DESCRIPTION OF FIELD METHODS AND THEIR RATIONALE,** making explicit the manner in which the data were collected and analyzed.

J. A **DESCRIPTION OF THE RESULTS OF THE INVESTIGATIONS, AND DOCUMENTATION ACTIVITIES** synthesizing the previous research, field data, and laboratory analysis, if applicable. This should include specific statements about the significance of the site. Discuss the investigation work in detail. Historic and current photographs, maps, plans, and other illustrations should be integrated into the text. In preparing the text, the authors should follow the requirements described in the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48FR 44734-37), and the Advisory Council's handbook *Treatment of Archaeological Properties*.

K. **CONCLUSIONS/RECOMMENDATIONS** as to the potential NRHP listings and/or the need for additional (Phase III) field work.

L. A **REFERENCES CITED** section listing all references cited within the text and within any appendices, including all primary and secondary sources, the sources' location or repository, personal communications, interviews, and pertinent project correspondence. This list must be in the format used by professional archaeological journals, such as *Historical Archaeology*, Journal for the Society for Historical Archaeology or *IA*, Journal for the Society for Industrial Archaeology.

M. **APPENDICES** to the draft and final reports will include:

a. **LOG OF PERSONS/INSTITUTIONS**, etc contacted as part of this project, indicating their affiliation(s), address and areas of expertise. The log should include the date and means of the contact (telephone conversation, interview, or written communication).

b. **SUPPORTING DOCUMENTATION**

c. The **RESUME/CURRICULUM VITAE** of the key personnel

d. **SCOPE OF WORK**

N. **PAGE SIZE AND FORMAT.** Each report shall be produced on 8 1/2" x 11" paper, single-spaced, with double spacing between paragraphs. The printing of the text should be of good quality and should approximate letter quality. Maps, if necessary, may be produced on 8 1/2" by 17" paper. All text pages, including figures, tables, plates, and appendices, must be consecutively numbered.

O. **GRAPHIC PRESENTATION OF THE RESULTS.**

a. All pages, including graphic presentations will be numbered sequentially.

b. All tables shall have a number, title, appropriate explanatory notes and a source note.

c. All figures shall have a title block containing the name of the project, county, and state, and will provide the reference, if applicable, as well as the name of the firm conducting the work.

d. All maps shall display a north arrow, graphical scale, and key, where applicable. They will also include a reference, if applicable, and the name of the firm conducting the work.

e. All graphic presentations, including maps, charts and diagrams, shall be referred to as "Figures." All figures must be sequentially numbered and cited by number within the body of the text.

f. All graphic presentation should follow the page on which they were cited.

g. Graphic presentation should include, but not be limited to, the following:

i. a project area base map, outlining clearly and accurately, the project

boundaries on appropriate portion of the relevant U.S.G.S. quad sheet(s), with the name of the quad sheet(s) clearly indicated in the map title and year of issue.

ii. a cultural resources base map delineating the locations of test units and the properties that were documented during the investigation.

P. **PHOTOGRAPHS**

a. Digital photographs should be integrated into the report text and not appended. All photographs should be correctly keyed to the text and a principal map. Photographs should be counted as "Figures" in a single running series of illustrations. The captions underneath the photograph should also include the direction in which the camera is facing.

b. Digital photographs must be a minimum of 300dpi and in a TIFF format.

c. Aside from being included within the text, a separate disk(s) of the photographs should also be submitted. The disk(s) should be attached to the back of the submitted text within a closed/sealed CD envelope.

Q. **MAPS**

a. A map of the project area should be included noting the location of the elements/structures which are being investigated.

b. The report should include the project area accurately delineated on a section of the USGS map and the appropriate quad labeled.

c. Maps should be integrated into the report and not appended. All maps should be correctly keyed to the text with photographed sites noted.

d. All maps, including reproductions of historic maps, should include a north arrow, delineation of the project area, legend, map title, bar scale, and year of publication.

R. **OTHER ILLUSTRATIONS (IF NECESSARY)**

a. Illustrations should be integrated and not appended. All illustrations should be correctly keyed to the text and the principal map.

b. Diagrams of engineering structures should include clearly labeled components.

c. Cross-sections, elevations, site plans, and profile drawings should include scale, elevation, orientation, location, title (historic name), construction date, and illustrator.

VII. Field Documentation

All original notes, forms, and maps will be retained and curated as provided by 36 CFR Part 79.

VIII. Project Schedule

A. The Contractor will initiate the contract upon receipt of the award of the work order/notice to proceed. The Contractor will coordinate with the District at the initiation of the project and arrange the dates of the field survey.

B. It is anticipated that the coordination for the Testing Plan will commence with the Notice to Proceed (NTP) and barring significant issues, the formalized Testing Plan should be submitted to the District two (2) weeks after the NTP. The Testing Plan will be reviewed by the District and the NGB. The Safety Plan should be submitted to the District within two (2) weeks of the NTP and will be reviewed by the District.

C. Depending on the completion of the Testing Plan phase, and the weather conditions at the project site, it is anticipated that the draft report will be submitted to the District fourteen (14) weeks after the NTP. The District, the NGB and the NY SHPO will review the draft report. Comments, if any, will be provided to the contractor. The final report will address all comments provided with the draft report. The Contractor should receive comments from the draft report approximately six (6) to eight (8) weeks after submission.

D. The final report will be submitted to the District four (4) weeks after the Contractor receives comments on the draft report.

E. The number of copies for the testing plan, safety plan, draft and final reports will be submitted, according to the above schedule, as follows:

a. Two (2) hard and digital copies of the testing plan

b. Two (2) hard and digital copies of the safety plan

c Three (3) hard and digital copies of the draft report

d. Four (4) hard and digital copies of the final report.

e. Note: The format for the digital copies should be a text format (e.g. MS Word 95 or greater), an Adobe Acrobat ".pdf" file format (to best convert charts, graphs, photographs, text, etc.) and all databases.

F. Scheduled completion date for the work specified in this scope is no later than six months from the Notice to Proceed.

IX. Additional Contract Requirements

A. Agencies, institutions, corporations, associations or individuals will be considered qualified when they meet the minimum criteria given below. As part of the supplemental documentation, a contract proposal must include vitae for the Principal Investigator and main supervisory personnel in support of their academic and experiential qualifications for the research.

1. Archaeological Project Director or Principal Investigator (PI). For the investigations required by this Scope, the Principal Investigator position must be filled by an archaeologist who specializes in terrestrial archaeology as defined below. Persons in charge of an archaeological project or research investigation contract, in addition to meeting the appropriate standards for archaeologist, must have the doctorate or an equivalent level of professional experience as evidenced by a publication record that demonstrates experience in project formulation, execution, and technical monograph reporting. Suitable professional references may also be made available to obtain estimates regarding the adequacy of prior work. If prior projects were of a sort not ordinarily resulting in a publishable report, a narrative should be included detailing the proposed project director's previous experience along with references suitable to obtain opinions regarding the adequacy of this earlier work.

B. Principal Investigators shall be responsible for the validity of material presented in their reports. In the event of a controversy or court challenge, the Principal Investigator shall be required to testify on behalf of the government in support of findings presented in their reports.

C. Neither the Contractor nor his/her representatives shall release any sketch, photograph, report or other data, or material of any nature obtained or prepared under this contract without specific written approval of the New York District prior to the time of final acceptance of the government.

D. The Contractor shall furnish all labor, transportation, instruments, survey equipment, boats and other associated materials to perform the work required by this Scope of Work.

X. Contractors Use of materials in Public Forms/Conferences

Based on the newly created internal Standard Operating Procedures for the District, contactors can no longer use information gathered from work undertaken on behalf of the Corps of Engineers, or its entities, without obtaining the necessary approval from the appropriate person(s) within the District. All conference, journal or book submissions must first be reviewed and approved by the District. The point-of-contact for the project will facilitate this process if the contractor desires.

XI. Fiscal Arrangements

A. Partial payments of the total amount allocated will be dispersed upon the receipt and acceptance of invoices. Invoices will be submitted monthly and with the Remote Sensing Plan and the Interim and Draft reports. The total amount of these invoices shall not total more than 90% of the agreed work order amount. The remaining 10% of the agreed work order amount shall be paid upon the receipt and approval of the final report, photographs, if applicable, original figures, etc. and the receipt of the final invoice.

B. Payments will be made in accordance with the "Prompt Payment" section in the base contract.

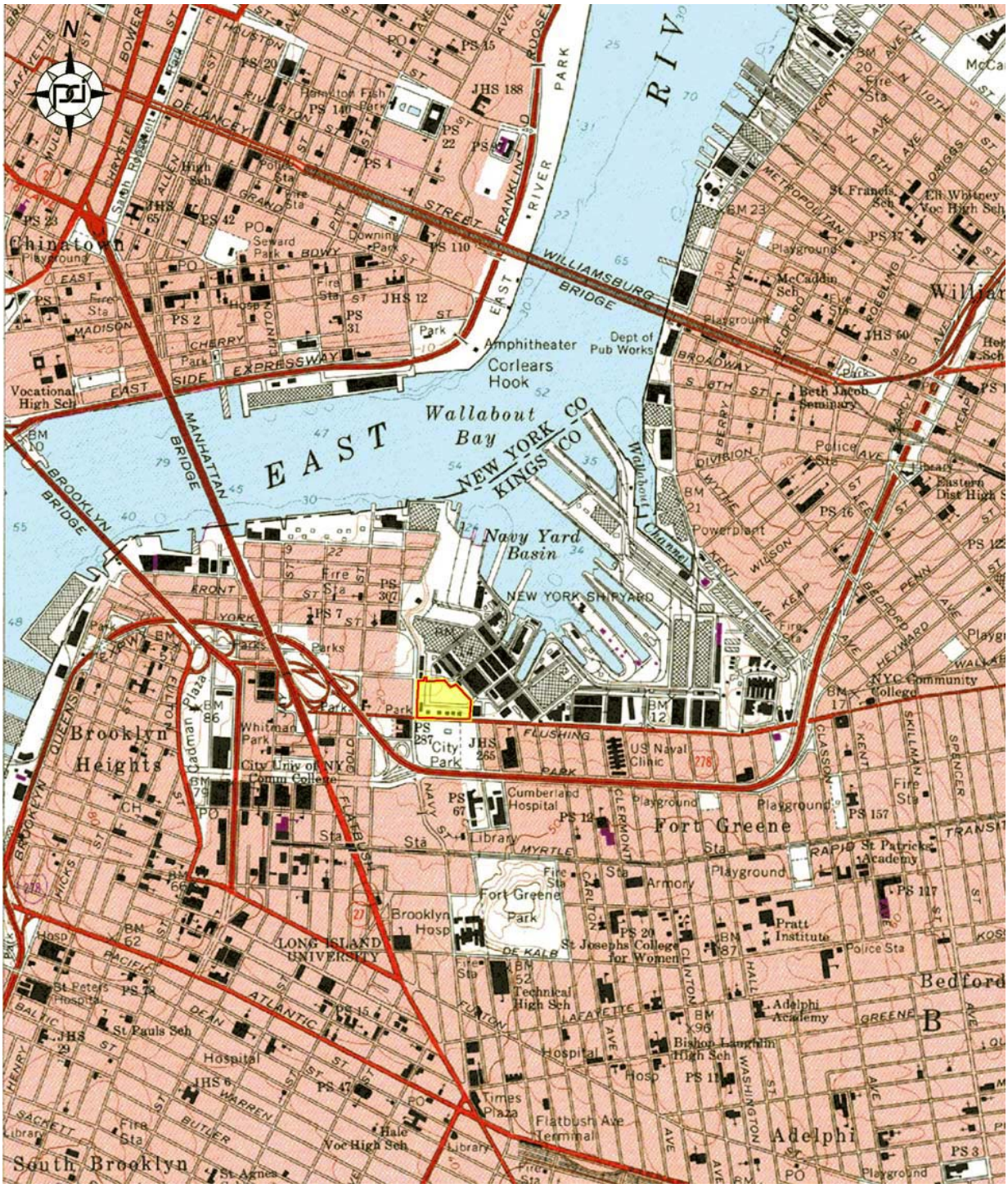
C. Scheduled completion date for the work specified in this Scope of Work is 30 June 2009.

D. The Corps Point of Contact for this project is:

Dr. Christopher Ricciardi, Project Archaeologist
U.S. Army Corps of Engineers –
Planning Division – Environmental Branch
Jacob K. Javits Federal Building
26 Federal Plaza – Room 2151
New York, New York 10278-0090
Phone: (212) 264-0204
Fax: (212) 264-0961
Cell: (917) 892-2033
E-mail: christopher.g.ricciardi@usace.army.mil

APPENDIX A:

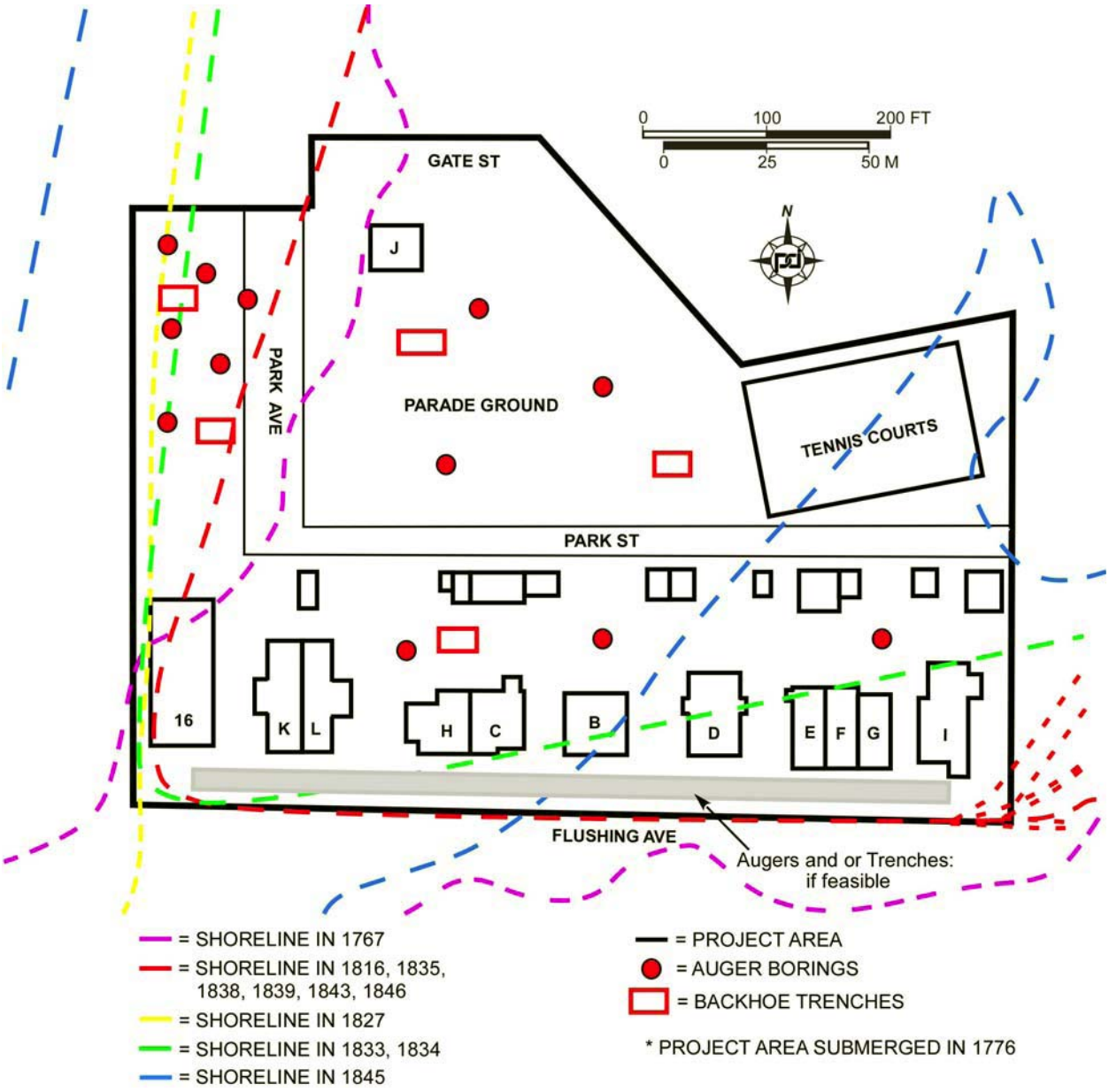
SITE LOCATION



The Admiral's Row project area within the former Brooklyn Navy Yard
Kings County, New York *(USGS Brooklyn, NY 1980).*

APPENDIX B:

INITIAL PHASE IB PROPOSED TESTING LOCATIONS



Suggested Phase IB geomorphological survey locations relative to historic map-documented shoreline locations.

Appendix I
CURRICULUM VITA OF PRINCIPAL INVESTIGATOR

Panamerican Consultants, Inc.

Donald A. Smith, Ph. D.

Staff Archaeologist

Ph.D., Anthropology, SUNY at Buffalo (2005)
Advanced Graduate Certificate, Geographic Information Science, SUNY at Buffalo (2005)
M.A., Anthropology, SUNY at Buffalo (2003)
B.A., Anthropology, Public Archaeology Concentration, Bridgewater State College (Mass.) (1999)
B.A., History, with honors, Bridgewater State College (Mass.) (1999)
B.S. Mathematics, *summa cum laude*, Bridgewater State College (Mass.) (1999)

With more than twelve years of field and research experience in prehistoric and historic archaeology in the Northeast, Dr. Smith exceeds the requirements in 36 CFR 61 for Archaeology (prehistoric and historic). He has participated in numerous investigations in Massachusetts and New York State, in which he served as principal investigator, field director, GIS specialist, and field technician. He is experienced at conducting archaeological research and analysis at both large-scale and small-scale projects. Additionally, he is practiced at a variety of laboratory/analytical methods. Dr. Smith has presented papers at professional conferences in the United States and Canada, including the Chacmool Conference in Calgary, AB, Canada, and the annual meeting of the Society for American Archaeology. He is preparing several additional papers for publication in peer-reviewed journals.

Relevant Panamerican Experience:

- Dr. Smith serves as principal investigator, field director, and GIS specialist. He has supervised Phase I, II, and III field investigations, including Phase I site inspections and field survey for antenna construction in Tompkins County, power line installation at Hamilton College in Kirkland, NY, the Oriskany Ecosystem Restoration Project in Oriskany, NY, and the installation of a water line crossing the Erie Canal in Pendleton, NY, Phase II investigations for flood control measures along Fulmer and Steele Creeks in Herkimer County, NY and for improvements at Old Fort Niagara National Historic Landmark, Phase II and III examinations at the First Niagara Bank site in Lewiston, New York, Phase III monitoring and excavations at the Avon Bridge site in the village of Avon, and Phase III work at the prehistoric Erie Canal Harbor site in the city of Buffalo. His responsibilities include, but are not limited to, supervision of multiple person crews, placement of subsurface tests and excavation units, photographic documentation, mapping of disturbances and features, field survey, data analysis, and report writing. Before working with Panamerican Consultants, he participated in excavations at several prehistoric sites in southeastern Massachusetts and served as teaching assistant / assistance field supervisor at the University at Buffalo's summer field school excavation at Old Fort Niagara state park in Youngstown, New York.

Relevant Archaeological Experience:

- Dr. Smith has extensive experience in the analysis of prehistoric lithics and ceramics, as well as historical assemblages. In 2001, he participated in the Artifact Inventory Project at the Robbins Museum of Archaeology in Middleboro, Massachusetts during which he identified the type, function, and composition of thousands of prehistoric stone artifacts from eastern Massachusetts. For his master's and dissertation projects, he focused on ceramic analyses of assemblages from sites in western and central New York State. His masters' project was a study of the 'functional' attributes of vessels from the protohistoric Simmons site in Elma, NY. His dissertation centered on attributes of vessels from the early Late Woodland Carpenter Brook site – a site formed during repeated ritual acts – and how their attributes compared with those from the village assemblages excavated at the Bates, Maxon-Derby, and Sackett sites. The databases for the projects were assembled from collections housed at the University at Buffalo's Marian White Museum, the Rochester Museum and Science Center, and the New York State Museum.
- Dr. Smith's graduate studies were funded by an NSF IGERT (Integrative Graduate Education and Research Training) fellowship in geographic information science. During his time in graduate school, he applied his knowledge of GIS and geographic information science to several archaeological projects. In 2004, he surveyed the structures at Old Fort Niagara with a total station, digitized survey maps from previous archaeological research, and used the data to develop a GIS that will serve as the basis for future spatial analysis by other researchers. Also in 2004 he employed a GIS to aid in the interpretation of the industrial remains at the Tifft Nature Preserve in South Buffalo, as well as to develop a public-participation workshop focusing on industrial archaeology and how researchers employ technology in their interpretations of archaeological remains. Finally, from 2003-2005, Dr. Smith served as GIS specialist for the Thy Archaeology Project, a role in which his responsibilities included developing a GIS database for soil survey and archaeological data collected on the Thy region of Denmark.